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June 3, 2021
File No. 04.0190987.14

Mr. Michael Summerlin, P.E.
New Hampshire Department of Environmental Services
Waste Management Division
29 Hazen Drive
P.O. Box 95
Concord, New Hampshire 03301-0095

Re: Data Transmittal
May 2021 Supplemental Groundwater Sampling for PFAS
New Hampshire Plating Company Superfund Site
Merrimack, New Hampshire
NHDES No. 198406030
Project No. 1951

Dear Michael:

GZA GeoEnvironmental, Inc. (GZA) is pleased to submit to the New Hampshire Department of Environmental Services (NHDES) this summary of the May 2021 supplemental groundwater sampling for per- and polyfluoroalkyl substances (PFAS) at the New Hampshire Plating Company (NHPC) Superfund Site (Site) in Merrimack, New Hampshire. The objective of the supplemental groundwater sampling was to collect groundwater samples for PFAS analysis from the 15 Site monitoring locations from which samples for PFAS have not previously been collected. Refer to **Table 1** for the monitoring locations sampled.

This data transmittal presents GZA's field observations, results, and technical presentations and opinions. The technical presentations and opinions included in this report are subject to modification based on additional information obtained by GZA or provided to GZA by other parties and the attached **Limitations**.

Authorization to proceed on this project was granted by NHDES in accordance with our proposed Scope of Work and Budget Estimate dated February 19, 2021, and NHDES' Work Scope Approval (WSA) dated February 22, 2021 (WSA #3), and Change Order #1 to WSA #3 (WSA #3.1) dated April 23, 2021. The work was performed in general accordance with our NHDES Contract for Environmental Consulting Services effective as of July 1, 2019 through June 30, 2023 as approved by the Governor and Council on June 5, 2019. GZA collected groundwater samples in accordance with the Hazardous Waste Remediation Bureau (HWRB) Master Quality Assurance Project Plan (QAPP) EPA RFA# 18008 current at the time of sampling, the EPA- and NHDES-approved September 2020 Sampling and Analysis Plan (SAP), and the revised SAP tables dated April 27, 2021.

Between May 3 and 5, 2021, GZA performed groundwater sampling using low-flow sampling methodology at the 15 monitoring locations identified on the revised SAP



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tables. Groundwater sampling of monitoring wells was conducted primarily using a combination of peristaltic pumps and dedicated bladder pumps. Collection of groundwater using a peristaltic pump included: a pump equipped with a pump head designed to accommodate thin wall silastic tubing; dedicated down-well polyethylene tubing; an In-Situ AquaTroll 600 (AquaTroll) multi-parameter sonde and flow-through cell (for specific conductance, oxidation reduction potential [ORP], dissolved oxygen [DO], pH, and temperature); and a Hach Model 2100Q turbidity meter (Hach). Collection of groundwater samples using a bladder pump included: a dedicated QED T1250 Bladder Pump (100-milliliter polyethylene bladder); compressed nitrogen and an MP-10 controller; dedicated polyethylene tubing; an In-Situ AquaTroll multi parameter sonde and flow-through cell; and a Hach turbidity meter.

A water quality sample was also collected from the production well at the Jones Chemical, Inc., facility (NHP_JCPROD-1). In accordance with the SAP, the production well sample was collected as a grab sample at the main “trunk” port. No purging was necessary since the pump had already been in operation prior to sample collection. Due to physical limitations of accessing the sample port, field parameters were collected as a grab sample using a SmarTroll (specific conductance, ORP, DO, pH, and temperature) and HACH 2100Q (turbidity) following sample collection.

Except as specifically noted herein, GZA followed the procedures outlined in the SAP. Overall, the data collected during the May 2021 groundwater sampling was found by GZA to be acceptable for its intended use. Of the analytical samples collected, no results were rejected. GZA notes the following sampling deviations from the SAP:

- Monitoring wells with partially saturated screens were purged and sampled using low-flow methodology rather than the modified sampling procedure because PFAS samples have a low volatility; and
- Monitoring well MW-109D was purged and sampled using the modified sampling procedure because of the high turbidity observed during historical sampling of the well and the presumed damaged condition of the well screen.

From a completeness perspective, the goal of 90% completeness was achieved for the groundwater sampling activities. The laboratory (Alpha Analytical) achieved the reporting limits for the test method. Calibration and associated checks of the AquaTroll and Hach were successful and no data required qualification by GZA during the monitoring activities. Field quality control samples including trip blanks, field blanks, and equipment blanks were found free of contamination. No duplicate samples exceeded the acceptance criteria for the calculated relative percent difference (30 percent for aqueous samples).

Refer to **Table 1** for locations sampled, the sampling equipment used, and the analyses performed; **Table 2** for well construction information; **Table 3** for groundwater elevation data; **Table 4** for a summary of analytical results for groundwater; and **Table 5** for specific details regarding the calculated relative percent difference (RPD) for duplicate samples. Refer to **Figure 1**, **Figure 2**, and **Figure 3** for the interpreted distribution of PFOA concentrations detected in groundwater at the Site. PFOA was selected to be represented on the figures as the main PFAS contaminant of concern because it was the only PFAS contaminant to exceed its AGQS, EPA SL, and EPA Health Advisory. The highest concentration of PFOA historically detected at each monitoring location was used to develop **Figure 1** through **Figure 3**.

GZA has attached copies of our **field notes**, **low flow well purging field water quality measurement forms**, **vendor equipment certifications**, **instrument calibration logs**, and **Alpha's analytical laboratory data packages** associated with the May 2021 supplemental groundwater sampling.



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NHDES – Supplemental Groundwater PFAS Sampling

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The results of the supplemental groundwater sampling for PFAS will be further summarized in the next Monitoring Report for the Site. The next monitoring event at NHPC is tentatively scheduled for fall 2022.

GZA trusts that the information contained herein meets your needs. Please feel free to call should you have any questions or require additional information.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Tanya P. Justham
Senior Project Manager

Claire G. Lund, P.E.
Consultant / Reviewer

Steven R. Lamb, P.G., C.G.W.P
Principal

TPJ/SRL/CGL:kr

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Attachment: Tables
 Figures
 Limitations
 Field Notes
 Low Flow Well Purging Field Water Quality Measurement Forms
 Vendor Equipment Certifications
 Instrument Calibration Logs
 Analytical Laboratory Data Package



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Tables

TABLE 1 - SUMMARY OF MAY 2021 MONITORING ACTIVITIES

New Hampshire Plating Company Superfund Site

Merrimack, New Hampshire

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Sample Location	Date Collected	Sampling Method Used	Laboratory Analyses Planned and Performed					Field NA Parameters ¹	
			VOCs (8260C)	1,4-Dioxane (8270D SIM)	Total Metals As, Cd, Cr, Pb, Mn, Ni (6020B)	Cyanide (9010C/9012B)	PFAS (537mod LC/MS/MS)		
NHP_JCPROD-1	5/4/2021	Spigot					x	Grab	
NHP_JCMW-2S	5/4/2021	Low Flow using a Peristaltic Pump ²					x	x	
NHP_JCMW-4S	5/4/2021						x	x	
NHP_JCMW-6	5/4/2021						x	x	
NHP_MW-109S	5/5/2021						x	x	
NHP_MW-109S DUP							x	na	
NHP_MW-109D	5/4/2021	Low Flow using a Bladder Pump					x	Grab	
NHP_MW-109R	5/5/2021						x	x	
NHP_MW-304S	5/3/2021						x	x	
NHP_MW-305S	5/3/2021						x	x	
NHP_MW-305D	5/3/2021	Low Flow using a Peristaltic Pump ²					x	x	
NHP_MW-307S	5/5/2021						x	x	
NHP_MW-307S DUP							x	na	
NHP_MW-310D	5/4/2021						x	x	
NHP_MW-312S	5/3/2021						x	x	
NHP_MW-312D	5/3/2021						x	x	
NHP_MW-402D	5/4/2021						x	x	

TABLE KEY:

ns = not sampled

na = not applicable

ft = feet

VOCs = Volatile Organic Compounds

As = Arsenic

Cd = Cadmium

Cr = Chromium

Pb = Lead

Mn = Manganese

Ni = Nickel

PFAS = Per- and Polyfluoroalkyl Substances

NA = Natural Attenuation

SPECIFIC NOTES:

1. Field NA parameters include specific conductance, oxidation-reduction potential (ORP), dissolved oxygen (DO), pH, temperature and turbidity using an In-Situ AquaTROLL 600 multi-parameter meter and a Hach 2100Q turbidity meter. Grab indicates field parameter readings that were collected without stabilization.
2. A Geotech GeoPump Series II Variable Speed 300 + 600 RPM peristaltic pump was used to sample the peristaltic pump wells.

TABLE 2 - WELL CONSTRUCTION INFORMATION
 New Hampshire Plating Company Superfund Site
 Merrimack, New Hampshire

Well Identification	Well Diameter (inches)	Aquifer Well is Screened	Well Location & Sample Rationale		Sampling		Measuring Reference Point		Reported Well Construction Information					Sampling Intake			
			Property Well is Associated With	Sample Rationale	Method	Pump	Location (TOC / TOPVC)	Elevation (ft-NGVD)	Reported Well Depth (ft bmp)	Depth to Top of Screen (ft bmp)	Screen Bottom (ft bmp)	Screen / Open Borehole Length (ft)	Historical Low Water Levels ¹ (ft bmp)	Saturated Screen Depth to Intake (ft bmp)	Depth to Intake (ft bmp)	Partially Screen Saturated ²	Height of Intake from Well Bottom (ft)
NHP_JCPROD-1	6	Bedrock	Jones Chemical	Production well	Grab - Spigot	N/A	N/A ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
NHP_JCMW-2S	2	Shallow	Jones Chemical	Downgradient	LF/No Purge	Peristaltic	TOPVC	123.37	22.6	12.6	22.6	10	19.56	--	21.1	1.5	
NHP_JCMW-2D	2	Deep	Jones Chemical	Downgradient	Low Flow	Peristaltic	TOPVC	122.77	49.5	39.5	49.5	10	20.30	44.5	--	--	
NHP_JCMW-4S	2	Shallow	Jones Chemical	Downgradient	LF/No Purge	Peristaltic	TOPVC	124.85	22.7	12.7	22.7	10	20.62	--	21.6	1.0	
NHP_JCMW-4D	2	Deep	Jones Chemical	Downgradient	Low Flow	Peristaltic	TOPVC	124.03	47.3	37.3	47.3	10	20.92	42.25	--	--	
NHP_JCMW-6	2	Shallow	Jones Chemical	Downgradient	LF/No Purge	Peristaltic	TOPVC	121.68	25.7	10.7	25.7	15	21.98	--	23.9	1.9	
NHP_MW-102S	2	Shallow	NHPC Properties	Upgradient	LF/No Purge	Bladder	TOPVC	130.54	33.6	13.6	33.6	20	25.79	--	29.5	4.1	
NHP_MW-102D	2	Deep	NHPC Properties	Upgradient	Low Flow	Bladder	TOPVC	130.16	65.5	45.5	65.5	20	25.88	47.4 ⁵	--	--	
NHP_MW-102R	6	Bedrock	NHPC Properties	Upgradient	Low Flow	Bladder	TOC	130.13	262.4	80.4	262.4	182	32.99	171.4	--	--	
NHP_MW-106	2	Deep	Former YMCA Property	Sentry	Low Flow	Peristaltic	TOPVC	117.69	97.8	62.8	97.8	35	18.44	80.3	--	--	
NHP_MW-106R	6	Bedrock	Former YMCA Property	Sentry	Low Flow	Peristaltic	TOC	117.67	202.7	120.7	202.7	82	18.02	161.7	--	--	
NHP_B-10S	1.5	Shallow	Former YMCA Property	Sentry	LF/No Purge	Peristaltic	TOC	119.26	28.5	8.4	28.4	20	19.81	--	24.1	4.3	
NHP_MW-108S	2	Shallow	J&S Patterson	Downgradient	LF/No Purge	Bladder	TOPVC	123.79	32.7	17.7	32.7	15	27.58	--	30.1	2.6	
NHP_MW-108D	2	Deep	J&S Patterson	Downgradient	Low Flow	Bladder	TOPVC	123.57	85	50	85	35	24.34	67.5	--	--	
NHP_MW-109S	2	Shallow	New England Pole	Sentry	LF/No Purge	Bladder	TOPVC	124.71	37.8	17.8	37.8	20	30.02	--	33.9	3.9	
NHP_MW-109D ¹¹	2	Deep	New England Pole	Sentry	Low Flow	Bladder	TOPVC	124.55	78.6	58.6	78.6	20	29.55	68.6	--	--	
NHP_MW-109R	6	Bedrock	New England Pole	Sentry	Low Flow	Bladder	TOC	123.65	263.6	100.6	263.6	163	28.37	161 ⁶	--	--	
NHP_MW-202S ⁴	2	Shallow	New England Pole	Cross-gradient	LF/No Purge	Bladder ⁴	TOPVC	123.34	37.2	22.2	37.2	15	29.70	--	33.5	3.8	
NHP_MW-202D	2	Deep	New England Pole	Cross-gradient	Low Flow	Bladder	TOPVC	123.80	66.6	56.6	66.6	10	29.10	61.6	--	--	
NHP_MW-203SX	2	Shallow	Equivise	Downgradient	LF/No Purge	Peristaltic	TOPVC	125.59	27.5	17.5	27.5	10	26.97	--	27.0	0.5	26.2 / 0.8
NHP_MW-203D	2	Deep	Equivise	Downgradient	Low Flow	Bladder	TOPVC	126.00	72.8	60.8	72.8	12	29.05	66.8	--	--	
NHP_MW-204S	2	Shallow	Transsupport	Downgradient	LF/No Purge	Bladder	TOPVC	123.01	37.6	22.6	37.6	15	24.06	--	30.4	7.2	
NHP_MW-204D	2	Deep	Transsupport	Downgradient	Low Flow	Bladder	TOPVC	123.44	59.3	49.3	59.3	10	26.40	54.3	--	--	
NHP_MW-204R	2	Bedrock	Transsupport	Downgradient	Low Flow	Bladder	TOPVC	123.21	82.8	72.8	82.8	10	26.17	77.8	--	--	
NHP_MW-301S	2	Shallow	Former YMCA Property	Sentry	Low Flow	Peristaltic	TOPVC	116.60	26.6	16.6	26.6	10	16.27	21.6	--	--	
NHP_MW-301D	2	Deep	Former YMCA Property	Sentry	Low Flow	Peristaltic	TOPVC	116.47	49.5	39.5	49.5	10	16.25	44.5	--	--	
NHP_MW-302S	2	Shallow	NHPC Properties	Cross-gradient	LF/No Purge	Peristaltic	TOPVC	117.87	24.1	14.1	24.1	10	17.97	--	20.9	3.2	
NHP_MW-302SA	2	Shallow	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	118.64	24.4	22.8	23.8	1	18.73	23.2	--	--	
NHP_MW-302D	2	Deep	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	117.99	66.5	56.5	66.5	10	17.58	61.5	--	--	
NHP_MW-302DA	2	Deep	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	118.77	48.4	46.9	47.9	1	17.77	47.5	--	--	
NHP_MW-303S	2	Shallow	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	116.43	24.3	14.3	24.3	10	12.16	19.3	--	--	
NHP_MW-303SA	2	Shallow	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	117.72	26.2	24.5	25.5	1	13.51	24.7	--	--	
NHP_MW-303D	2	Deep	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	116.31	60.2	50.2	60.2	10	14.50	55.2	--	--	
NHP_MW-303DA	2	Deep	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	117.33	43.9	42.2	43.2	1	15.12	42.8	--	--	
NHP_MW-304S	2	Shallow	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	118.52	24.8	14.8	24.8	10	14.18	19.8	--	--	
NHP_MW-304D	2	Deep	NHPC Properties	Cross-gradient	Low Flow	Peristaltic	TOPVC	118.45	50.6	40.6	50.6	10	15.10	45.6	--	--	
NHP_MW-305S	2	Shallow	NHPC Properties	Upgradient	Low Flow	Peristaltic	TOPVC	117.94	26.8	16.8	26.8	10	13.84	21.8	--	--	
NHP_MW-305D	2	Deep	NHPC Properties	Upgradient	Low Flow	Peristaltic	TOPVC	118.07	55.7	45.7	55.7	10	14.03	50.7	--	--	
NHP_MW-306S	2	Shallow	Former YMCA Property	Sentry	LF/No Purge	Peristaltic	TOPVC	111.70	19.7	9.7	19.7	10	13.90	--	16.7	3.0	
NHP_MW-306D	2	Deep	Former YMCA Property	Sentry	Low Flow	Peristaltic	TOPVC	111.65	38.8	28.8	38.8	10	13.56	33.8	--	--	
NHP_MW-307S	2	Shallow	Former YMCA Property	Downgradient	LF/No Purge	Peristaltic	TOPVC	117.05	27.7	17.7	27.7	10	19.72	--	23.7	4.0	
NHP_MW-307D	2	Deep	Former YMCA Property	Downgradient	Low Flow	Peristaltic	TOPVC	117.15	68.8	58.8	68.8	10	17.56	63.8	--	--	
NHP_MW-308S	2	Shallow	NHPC Properties	Downgradient	LF/No Purge	Peristaltic	TOPVC	120.47	26.3	16.3	26.3	10	22.13	--	24.0	2.3	
NHP_MW-308SA	2	Shallow	NHPC Properties	Downgradient	Low Flow	Peristaltic	TOPVC	121.54	27.9	25.4	26.4	1	23.27	25.8	--	--	
NHP_MW-308D	2	Deep	NHPC Properties	Downgradient	Low Flow	Peristaltic	TOPVC	120.78	85.5	75.5	85.5	10	21.40	80.5	--	--	
NHP_MW-308DA	2	Deep	NHPC Properties</td														

TABLE 2 - WELL CONSTRUCTION INFORMATION
New Hampshire Plating Company Superfund Site
Merrimack, New Hampshire

Well Identification	Well Diameter (inches)	Aquifer Well is Screened	Well Location & Sample Rationale		Sampling		Measuring Reference Point		Reported Well Construction Information					Sampling Intake			
			Property Well is Associated With	Sample Rationale	Method	Pump	Location (TOC / TOPVC)	Elevation (ft-NGVD)	Reported Well Depth (ft bmp)	Depth to Top of Screen (ft bmp)	Screen Bottom (ft bmp)	Screen /Open Borehole Length (ft)	Historical Low Water Levels ¹ (ft bmp)	Saturated Screen Depth to Intake (ft bmp)	Depth to Intake (ft bmp)	Partially Screen Saturated ² Height of Intake from Well Bottom (ft)	Previously Saturated Depth to Intake/Change (ft)
NHP_MW-309D	2	Deep	NHPC Properties	Source	Low Flow	Peristaltic	TOPVC	119.61	69.9	59.9	69.9	10	18.09	64.9	--	--	
NHP_MW-309DA	2	Deep	NHPC Properties	Source	Low Flow	Peristaltic	TOPVC	119.62	53.6	50.4	51.4	1	17.88	50.9	--	--	
NHP_MW-309R	2	Bedrock	NHPC Properties	Source	Low Flow	Peristaltic	TOPVC	119.64	150.7	135.7	150.7	15	18.42	143.2	--	--	
NHP_MW-310S	2	Shallow	NHPC Properties	Source	LF/No Purge	Peristaltic	TOPVC	123.09	23.8	13.8	23.8	10	20.64	--	21.7	2.1	
NHP_MW-310D	2	Deep	NHPC Properties	Source	Low Flow	Peristaltic	TOPVC	122.59	68.8	58.8	68.8	10	20.36	63.8	--	--	
NHP_MW-311S	2	Shallow	NHPC Properties	Source	LF/No Purge	Peristaltic	TOPVC	123.91	19.5	9.5	19.5	10	18.95	--	19.0	0.5	
NHP_MW-311D	2	Deep	NHPC Properties	Source	Low Flow	Peristaltic	TOPVC	124.33	65.9	55.9	65.9	10	21.80	60.9	--	--	
NHP_MW-312S	2	Shallow	NHPC Properties	Sentry	LF/No Purge	Peristaltic	TOPVC	119.89	21.6	11.6	21.6	10	15.47	--	18.1	3.5	
NHP_MW-312D	2	Deep	NHPC Properties	Sentry	Low Flow	Peristaltic	TOPVC	119.94	49.5	39.5	49.5	10	15.99	44.5	--	--	
NHP_MW-400R	4/6 ⁸	Bedrock	Acme	Sentry	Low Flow	Peristaltic	TOC	116.26	201.7	55.0	201.7	146.7	14.74	163.1 ⁹	--	--	
NHP_MW-401S	2	Shallow	Acme	Sentry	Low Flow	Peristaltic	TOPVC	120.22	27.8	22.8	27.8	5	17.12	25.3	--	--	
NHP_MW-401D	2	Deep	Acme	Sentry	Low Flow	Peristaltic	TOPVC	119.74	47.6	37.6	47.6	10	16.95	42.6	--	--	
NHP_MW-402D	2	Deep	NHPC Properties	Source	Low Flow	Peristaltic	TOPVC	119.57	47.7	37.7	47.7	10	16.37	42.7	--	--	
NHP_MW-403SA ¹⁰	2	Shallow	NHPC Properties	Downgradient	Low Flow	Peristaltic	TOPVC	123.88	23.0	21.5	22.5	1	19.22 or Dry	21.9	--	--	
NHP_MW-404SA ¹⁰	2	Shallow	NHPC Properties	Source	Low Flow	Peristaltic	TOPVC	119.21	30.7	28.7	29.7	1	19.07	29.1	--	--	

TABLE KEY:

TOC = Top of Casing

TOPVC = Top of Polyvinyl Chloride

ft-NGVD = feet, referenced to the National Geodetic Vertical Datum

ft bmp = feet below measuring point

ft = feet

N/A = Not Applicable

-- = unknown information

LF/No Purge = Low Flow or No Purge depending upon water level.

No Purge/IR = no purge due to insufficient recharge

Wells that require tubing adjustments during the next sampling event

GENERAL NOTES:

* Information for this table, with the exception of three of the JCI property wells and the NHP_MW-400 well series, came from the Tetra Tech NPC QAPP 4, March 2008 table 8-2A4 and the GZA 2010 Annual Report.

Information for NHP_JCMW-4S, NHP_JCMW-4D, and NHP_JCMW-6 came from the boring logs by Wehran Engineering included in the JCI site file maintained at NHDES. The NHP_MW-400 well series was installed by GZA during October 2012. Monitoring wells with the designation "SA" and "DA" as well as NHP_MW-403S and NHP_MW-404S were installed by GZA during November 2018.

* **Bold** screen lengths indicate wells with screens greater than 10 feet in length. With the following exceptions, all of these wells have had interval sampling performed during 2010 to determine suitable placement of the tubing/pump intake. Based on the interval sampling results, the 2010 NHPC Annual Report recommended continued sampling at the mid-screen point for each well. NHP_MW-102D has an obstruction around 49 feet, which prevented the installation of passive diffusion bags below the uppermost intervals. NHP_MW-400R was installed during 2012 (see note below). NHP_JCMW-6 was added to the sampling program during 2013.

SPECIFIC NOTES:

1. Historical low water levels are compiled from water level measurements taken from 2007 to the present. This data is checked yearly and updated as necessary. Refer to Table 3 - Groundwater Level Measurements and Elevation Data for historical groundwater levels and elevations.
2. Historical water levels indicate that some of the wells may have partially saturated screens. In those cases, the sampling intake will be located in the middle of the saturated screen based on historical low water levels.
3. Jones Chemical production well (NHP_JCPROD-1), has a sampling spigot inside the building.
4. NHP_MW-202S is also sampled under the New England Pole Groundwater Permit, NO. GWP-198711004-M-002, and is sampled using a QED non-dedicated SamplePRO bladder pump.
5. Due to the known obstruction around 49 feet in NHP_MW-102D, the bladder pump intake was positioned 1.6 feet above the obstruction, approximately 47.4 feet from the top of the PVC, and still within the screen.
6. NHP_MW-109R - Depth of well 166 ft - either blocked or error in well log/historical reporting. The dedicated pump was placed at 161 feet.
7. NHP_MW-308D - Error in depth of well - measured by GZA/Nobis to be 85.8 feet.
8. NHP_MW-400R is a 4-foot diameter borehole from 55 ft to 200 ft below ground surface (bgs) with a 6-inch steel casing from 55 feet bgs to the stickup measuring point. For sampling purposes, this well will be treated as a 6-inch diameter well.
9. NHP_MW-400R sampling intake is not the midpoint of borehole, the intake location is similar to NHP_MW-106R.
10. An "A" was added to the end of the identification of NHP_MW-403S and NHP_MW-404S during the fall 2020 sampling event to associate them with the other short-screen wells installed during 2018.
11. NHP_MW-109D was redeveloped during 2015 due to high observed turbidity during the previous two sampling events. Redeveloping the well did not reduce the turbidity indicating that the well may be damaged at depth.

TABLE 3 - HISTORICAL GROUNDWATER LEVEL MEASUREMENTS AND ELEVATION DATA

New Hampshire Plating Company Superfund Site

Merrimack, New Hampshire

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Monitoring Well Designation	Screened Geologic Unit	Measuring Point	Measuring Point Elevation (ft-NGVD)	Screen Bottom ¹ (ft bmp)	May-07		Oct-07		Mar-08		Aug-09		Aug-10		Nov-11		Nov-12		
					Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	
NHP_JCMW-2S	Shallow Overburden	TOPVC	123.37	22.6	14.76	108.6	18.04	105.3	---	---	15.42	108.0	17.45	105.9	16.30	107.1	---	---	
NHP_JCMW-2D	Deep Overburden	TOPVC	122.77	49.5	14.91	107.9	20.30	102.5	---	---	16.53	106.2	16.16	106.6	18.10	104.7	19.96	102.8	
NHP_JCMW-4S	Shallow Overburden	TOPVC	124.85	22.65	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
NHP_JCMW-4D	Deep Overburden	TOPVC	124.03	47.25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
NHP_JCMW-6	Shallow Overburden	TOPVC	121.68	25.72	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
NHP_MW-102S	Shallow Overburden	TOPVC	130.54	33.6	19.80	110.7	25.39	105.2	20.66	109.9	20.98	109.6	23.98	106.6	22.92	107.6	16.52	114.0	
NHP_MW-102D	Deep Overburden	TOPVC	130.16	65.5	20.47	109.7	24.81	105.4	21.46	108.7	21.61	108.6	25.14	105.0	23.48	106.7	---	---	
NHP_MW-102R	Bedrock	TOC	130.13	262.4	25.47	104.7	32.99	97.1	26.02	104.1	26.67	103.5	31.21	98.9	31.20	98.9	27.86	102.3	
NHP_B-10S	Shallow Overburden	TOC	119.26	28.4	17.01	102.3	19.81	99.5	16.70	102.6	17.22	102.0	19.32	99.9	17.33	101.9	---	---	
NHP_MW-106	Deep Overburden	TOPVC	117.69	97.8	15.41	102.3	18.18	99.5	15.13	102.6	15.64	102.1	17.93	99.8	15.75	101.9	---	---	
NHP_MW-106R	Bedrock	TOC	117.67	202.7	15.38	102.3	18.02	99.7	15.20	102.5	15.64	102.0	17.52	100.2	15.65	102.0	---	---	
NHP_MW-108S	Shallow Overburden	TOPVC	123.79	32.7	21.80	102.0	27.48	96.3	22.31	101.5	23.39	100.4	26.81	97.0	23.95	99.8	---	---	
NHP_MW-108D	Deep Overburden	TOPVC	123.57	85	19.61	104.0	24.34	99.2	19.64	103.9	21.10	102.5	24.02	99.6	21.44	102.1	---	---	
NHP_MW-109S	Shallow Overburden	TOPVC	124.71	37.8	25.55	99.2	30.02	94.7	24.76	100.0	26.17	98.5	29.75	95.0	26.54	98.2	---	---	
NHP_MW-109D	Deep Overburden	TOPVC	124.55	78.6	25.10	99.5	29.55	95.0	24.58	100.0	26.01	98.5	29.31	95.2	26.21	98.3	---	---	
NHP_MW-109R	Bedrock	TOC	123.65	263.6	24.11	99.5	28.37	95.3	23.48	100.2	24.85	98.8	27.94	95.7	25.00	98.7	26.24	97.4	
NHP_MW-202S	Shallow Overburden	TOPVC	123.34	37.2	24.08	99.3	29.24	94.1	24.74	98.6	27.03	96.3	29.60	93.7	26.30	97.0	---	---	
NHP_MW-202D	Deep Overburden	TOPVC	123.80	66.58	23.27	100.5	28.78	95.0	24.03	99.8	26.36	97.4	29.10	94.7	25.73	98.1	---	---	
NHP_MW-203S	Shallow Overburden	TOPVC	126.01	34.08	23.05	103.0	26.83	99.2	23.68	102.3	24.39	101.6	---	---	24.67	101.3	---	---	
NHP_MW-203SX	Shallow Overburden	TOPVC	125.59	27.5	NHP_MW-203SX was installed during 2016. No data exists for this location prior to 2017.														
NHP_MW-203D	Deep Overburden	TOPVC	126.00	72.8	23.16	102.8	28.70	97.3	23.97	102.0	26.02	100.0	29.05	97.0	25.81	100.2	---	---	
NHP_MW-204S	Shallow Overburden	TOPVC	123.01	37.6	19.41	103.6	23.16	99.9	19.78	103.2	20.51	102.5	23.00	100.0	21.05	102.0	---	---	
NHP_MW-204D	Deep Overburden	TOPVC	123.44	59.3	20.55	102.9	26.40	97.0	21.39	102.1	23.24	100.2	26.30	97.1	23.65	99.8	---	---	
NHP_MW-204R	Bedrock	TOPVC	123.21	82.8	20.36	102.9	26.17	97.0	21.16	102.1	23.04	100.2	26.13	97.1	23.45	99.8	25.06	98.2	
NHP_MW-301S	Shallow Overburden	TOPVC	116.60	26.6	11.45	105.2	16.27	100.3	11.54	105.1	12.70	103.9	16.04	100.6	13.24	103.4	---	---	
NHP_MW-301D	Deep Overburden	TOPVC	116.47	49.5	11.85	104.6	16.25	100.2	11.78	104.7	12.83	103.6	15.79	100.7	13.35	103.1	---	---	
NHP_MW-302S	Shallow Overburden	TOPVC	117.87	24.1	12.06	105.8	17.63	100.2	12.36	105.5	13.85	104.0	16.86	101.0	14.37	103.5	---	---	
NHP_MW-302SA	Shallow Overburden	TOPVC	118.64	23.8	NHP_MW-XXXA series wells were installed in 2018.														
NHP_MW-302D	Deep Overburden	TOPVC	117.99	66.5	13.07	104.9	17.58	100.4	13.15	104.8	14.13	103.9	17.41	100.6	14.76	103.2	---	---	
NHP_MW-302DA	Deep Overburden	TOPVC	118.77	47.9	NHP_MW-XXXA series wells were installed in 2018.														
NHP_MW-303S	Shallow Overburden	TOPVC	116.43	24.3	7.34	109.1	12.07	104.4	8.17	108.3	8.61	107.8	11.79	104.6	9.50	106.9	---	---	
NHP_MW-303SA	Shallow Overburden	TOPVC	117.72	25.5	NHP_MW-XXXA series wells were installed in 2018.														
NHP_MW-303D	Deep Overburden	TOPVC	116.31	60.2	9.76	106.6	14.50	101.8	10.11	106.2	10.88	105.4	14.31	102.0	11.91	104.4	---	---	
NHP_MW-303DA	Deep Overburden	TOPVC	117.33	43.2	NHP_MW-XXXA series wells were installed in 2018.														
NHP_MW-304S	Shallow Overburden	TOPVC	118.52	24.8	9.56	109.0	14.07	104.5	9.80	108.7	10.58	107.9	13.74	104.8	11.48	107.0	---	---	
NHP_MW-304D	Deep Overburden	TOPVC	118.45	50.6	10.11	108.3	15.10	103.4	10.85	107.6	11.36	107.1	14.89	103.6	12.82	105.6	---	---	
NHP_MW-305S	Shallow Overburden	TOPVC	117.94	26.8	8.64	109.3	13.62	104.3	9.49	108.5	9.74	108.2	13.12	104.8	11.53	106.4	---	---	
NHP_MW-305D	Deep Overburden	TOPVC	118.07	55.7	8.84	109.2	13.81	104.3	9.72	108.4	9.96	108.1	13.57	104.5	11.75	106.3	---	---	
NHP_MW-306S	Shallow Overburden	TOPVC	111.70	19.7	9.25	102.5	13.60	98.1	9.01	102.7	10.19	101.5	13.40	98.3	10.48	101.2	---	---	
NHP_MW-306D	Deep Overburden	TOPVC	111.65	38.8	9.64	102.0	13.56	98.1	9.19	102.5	10.18	101.5	13.37	98.3	10.53	101.1	---	---	
NHP_MW-307S	Shallow Overburden	TOPVC	117.05	27.7	15.54	101.5	19.72	97.3	14.48	102.6	15.83	101.2	19.50	97.6	16.32	100.7	---	---	
NHP_MW-307D	Deep Overburden	TOPVC	117.15	68.8	13.11	104.0	17.56	99.6	13.10	104.1	14.17	103.0	17.39	99.8	14.67	102.5	---	---	
NHP_MW-308S	Shallow Overburden	TOPVC	120.47	26.3	15.81	104.7	21.62	98.9	16.67	103.8	17.88	102.6	20.81	99.7	18.44	102.0	---	---	
NHP_MW-308SA	Shallow Overburden	TOPVC	121.54	26.4	NHP_MW-XXXA series wells were installed in 2018.														
NHP_MW-308D	Deep Overburden	TOPVC	120.78	85.5	15.82	105.0	21.40	99.4	15.95	104.8	16.95	103.8	20.27	100.5	17.62	103.2	---	---	

TABLE 3 - HISTORICAL GROUNDWATER LEVEL MEASUREMENTS AND ELEVATION DATA

New Hampshire Plating Company Superfund Site

Merrimack, New Hampshire

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Monitoring Well Designation	Screened Geologic Unit	Measuring Point	Measuring Point Elevation (ft-NGVD)	Screen Bottom ¹	Aug-13		Jul-14		Jul-17		Jul-18		Oct-20		May-21	
					Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)
NHP_JCMW-2S	Shallow Overburden	TOPVC	123.37	22.6	17.55	105.8	17.25	106.1	15.23	108.1	17.38	106.0	19.56	103.8	17.45	105.9
NHP_JCMW-2D	Deep Overburden	TOPVC	122.77	49.5	18.57	104.2	17.77	105.0	16.80	106.0	17.77	105.0	20.04	102.7	---	---
NHP_JCMW-4S	Shallow Overburden	TOPVC	124.85	22.65	18.84	106.0	18.65	106.2	17.50	107.4	18.81	106.0	20.62	104.2	18.83	106.0
NHP_JCMW-4D	Deep Overburden	TOPVC	124.03	47.25	19.41	104.6	18.71	105.3	17.75	106.3	18.55	105.5	20.92	103.1	---	---
NHP_JCMW-6	Shallow Overburden	TOPVC	121.68	25.72	19.56	102.1	19.76	101.9	18.53	103.2	20.10	101.6	21.98	99.7	20.20	101.5
NHP_MW-102S	Shallow Overburden	TOPVC	130.54	33.6	24.24	106.3	23.46	107.1	22.37	108.2	23.62	106.9	25.79	104.8	---	---
NHP_MW-102D	Deep Overburden	TOPVC	130.16	65.5	24.4	105.8	24.24	105.9	22.75	107.4	24.03	106.1	25.88	104.3	---	---
NHP_MW-102R	Bedrock	TOC	130.13	262.4	26.52	103.6	28.73	101.4	24.36	105.8	25.16	105.0	27.67	102.5	---	---
NHP_B-10S	Shallow Overburden	TOC	119.26	28.4	16.81	102.5	18.14	101.1	17.06	102.2	17.85	101.4	18.75	100.5	---	---
NHP_MW-106	Deep Overburden	TOPVC	117.69	97.8	18.44	99.3	16.48	101.2	15.44	102.3	16.19	101.5	17.04	100.7	---	---
NHP_MW-106R	Bedrock	TOC	117.67	202.7	16.71	101.0	16.38	101.3	15.33	102.3	16.06	101.6	16.82	100.9	---	---
NHP_MW-108S	Shallow Overburden	TOPVC	123.79	32.7	25.52	98.3	25.66	98.1	24.45	99.3	26.43	97.4	27.58	96.2	---	---
NHP_MW-108D	Deep Overburden	TOPVC	123.57	85	22.92	100.7	22.83	100.7	21.68	101.9	22.97	100.6	23.68	99.9	---	---
NHP_MW-109S	Shallow Overburden	TOPVC	124.71	37.8	28.41	96.3	28.16	96.6	27.05	97.7	29.05	95.7	29.47	95.2	26.20	98.5
NHP_MW-109D	Deep Overburden	TOPVC	124.55	78.6	27.99	96.6	27.77	96.8	26.72	97.8	28.53	96.0	28.85	95.7	25.82	98.7
NHP_MW-109R	Bedrock	TOC	123.65	263.6	26.81	96.8	26.50	97.2	25.47	98.2	27.33	96.3	27.62	96.0	24.68	99.0
NHP_MW-202S	Shallow Overburden	TOPVC	123.34	37.2	28.23	95.1	28.59	94.8	28.24	95.1	29.70	93.6	28.60	94.7	---	---
NHP_MW-202D	Deep Overburden	TOPVC	123.80	66.58	27.64	96.2	27.91	95.9	27.27	96.5	28.77	95.0	27.84	96.0	---	---
NHP_MW-203S	Shallow Overburden	TOPVC	126.01	34.08	---	---	---	---	---	---	Well Decommissioned					
NHP_MW-203X	Shallow Overburden	TOPVC	125.59	27.5	NHP_MW-203SX was installed during 2016.				24.84	100.8	26.09	99.5	26.97	98.6	---	---
NHP_MW-203D	Deep Overburden	TOPVC	126.00	72.8	27.54	98.5	27.77	98.2	26.92	99.1	28.36	97.6	27.92	98.1	---	---
NHP_MW-204S	Shallow Overburden	TOPVC	123.01	37.6	22.18	100.8	22.34	100.7	21.52	101.5	22.68	100.3	24.06	99.0	---	---
NHP_MW-204D	Deep Overburden	TOPVC	123.44	59.3	24.7	98.7	24.50	98.9	23.71	99.7	25.14	98.3	25.26	98.2	---	---
NHP_MW-204R	Bedrock	TOPVC	123.21	82.8	24.50	98.7	24.31	98.9	23.51	99.7	24.93	98.3	25.06	98.2	---	---
NHP_MW-301S	Shallow Overburden	TOPVC	116.60	26.6	14.67	101.9	14.58	102.0	13.27	103.3	14.47	102.1	15.66	100.9	---	---
NHP_MW-301D	Deep Overburden	TOPVC	116.47	49.5	14.72	101.8	14.57	101.9	13.31	103.2	14.43	102.0	15.53	100.9	---	---
NHP_MW-302S	Shallow Overburden	TOPVC	117.87	24.1	16.38	101.5	16.13	101.7	14.87	103.0	16.22	101.7	17.97	99.9	---	---
NHP_MW-302SA	Shallow Overburden	TOPVC	118.64	23.8	NHP_MW-XXXA series wells were installed in 2018.						18.73	99.9	---	---	---	---
NHP_MW-302D	Deep Overburden	TOPVC	117.99	66.5	16.09	101.9	15.98	102.0	14.68	103.3	15.87	102.1	16.96	101.0	---	---
NHP_MW-302DA	Deep Overburden	TOPVC	118.77	47.9	NHP_MW-XXXA series wells were installed in 2018.						17.77	101.0	---	---	---	---
NHP_MW-303S	Shallow Overburden	TOPVC	116.43	24.3	10.73	105.7	11.02	105.4	9.52	106.9	10.85	105.6	12.16	104.3	---	---
NHP_MW-303SA	Shallow Overburden	TOPVC	117.72	25.5	NHP_MW-XXXA series wells were installed in 2018.						13.51	104.2	---	---	---	---
NHP_MW-303D	Deep Overburden	TOPVC	116.31	60.2	13.08	103.2	13.06	103.3	11.62	104.7	12.87	103.4	14.13	102.2	---	---
NHP_MW-303DA	Deep Overburden	TOPVC	117.33	43.2	NHP_MW-XXXA series wells were installed in 2018.						15.12	102.2	---	---	---	---
NHP_MW-304S	Shallow Overburden	TOPVC	118.52	24.8	12.83	105.7	13.09	105.4	11.62	106.9	12.89	105.6	14.18	104.3	12.55	106.0
NHP_MW-304D	Deep Overburden	TOPVC	118.45	50.6	13.81	104.6	13.82	104.6	12.27	106.2	13.54	104.9	15.05	103.4	---	---
NHP_MW-305S	Shallow Overburden	TOPVC	117.94	26.8	12.51	105.4	12.44	105.5	10.92	107.0	12.16	105.8	13.84	104.1	12.39	105.6
NHP_MW-305D	Deep Overburden	TOPVC	118.07	55.7	12.67	105.4	12.64	105.4	11.07	107.0	12.36	105.7	14.03	104.0	12.63	105.4
NHP_MW-306S	Shallow Overburden	TOPVC	111.70	19.7	12.06	99.6	11.84	99.9	10.66	101.0	11.93	99.8	13.90	97.8	---	---
NHP_MW-306D	Deep Overburden	TOPVC	111.65	38.8	12.02	99.6	11.82	99.8	10.62	101.0	11.91	99.7	12.85	98.8	---	---
NHP_MW-307S	Shallow Overburden	TOPVC	117.05	27.7	18.07	99.0	17.82	99.2	16.82	100.2	18.46	98.6	19.52	97.5</		

TABLE 3 - HISTORICAL GROUNDWATER LEVEL MEASUREMENTS AND ELEVATION DATA

New Hampshire Plating Company Superfund Site

Merrimack, New Hampshire

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Monitoring Well Designation	Screened Geologic Unit	Measuring Point	Measuring Point Elevation (ft-NGVD)	Screen Bottom ¹	May-07 Depth to Water (ft bmp)	May-07 Elevation (ft)	Oct-07 Depth to Water (ft bmp)	Oct-07 Elevation (ft)	Mar-08 Depth to Water (ft bmp)	Mar-08 Elevation (ft)	Aug-09 Depth to Water (ft bmp)	Aug-09 Elevation (ft)	Aug-10 Depth to Water (ft bmp)	Aug-10 Elevation (ft)	Nov-11 Depth to Water (ft bmp)	Nov-11 Elevation (ft)	Nov-12 Depth to Water (ft bmp)	Nov-12 Elevation (ft)
NHP_MW-308DA	Deep Overburden	TOPVC	121.70	46.9														
NHP_MW-308R	Bedrock	TOPVC	121.05	159.6	16.09	105.0	20.69	100.4	16.27	104.8	17.20	103.9	20.55	100.5	17.89	103.2	19.65	101.4
NHP_MW-309S	Shallow Overburden	TOPVC	119.10	20.5	11.81	107.3	16.37	102.7	11.79	107.3	13.20	105.9	15.92	103.2	13.85	105.3	---	---
NHP_MW-309SA	Shallow Overburden	TOPVC	119.47	21.4														
NHP_MW-309D	Deep Overburden	TOPVC	119.61	69.9	13.32	106.3	18.09	101.5	13.71	105.9	14.50	105.1	17.96	101.7	15.47	104.1	---	---
NHP_MW-309DA	Deep Overburden	TOPVC	119.62	51.4														
NHP_MW-309R	Bedrock	TOPVC	119.64	150.7	14.65	105.0	18.42	101.2	14.04	105.6	14.86	104.8	18.12	101.5	15.83	103.8	17.62	102.0
NHP_MW-310S	Shallow Overburden	TOPVC	123.09	23.8	14.75	108.3	19.52	103.6	14.94	108.2	16.02	107.1	19.00	104.1	16.48	106.6	---	---
NHP_MW-310D	Deep Overburden	TOPVC	122.59	68.8	15.37	107.2	20.36	102.2	15.94	106.7	16.47	106.1	20.13	102.5	18.04	104.6	---	---
NHP_MW-311S	Shallow Overburden	TOPVC	123.91	19.5	15.41	108.5	18.57	105.3	15.85	108.1	16.12	107.8	18.11	105.8	16.92	107.0	---	---
NHP_MW-311D	Deep Overburden	TOPVC	124.33	65.9	16.77	107.6	21.80	102.5	17.37	107.0	17.81	106.5	21.46	102.9	19.62	104.7	21.25	103.1
NHP_MW-312S	Shallow Overburden	TOPVC	119.89	21.6	10.44	109.5	14.67	105.2	10.70	109.2	11.26	108.6	14.06	105.8	12.25	107.6	---	---
NHP_MW-312D	Deep Overburden	TOPVC	119.94	49.5	10.98	109.0	15.76	104.2	11.60	108.3	11.95	108.0	15.44	104.5	13.56	106.4	15.51	104.4
NHP_MW-400R ³	Bedrock	TOC	116.07	201.69													14.70	101.6
NHP_MW-401S	Shallow Overburden	TOPVC	120.22	27.8													16.83	103.4
NHP_MW-401D	Deep Overburden	TOPVC	119.74	47.6													16.58	103.2
NHP_MW-402D	Deep Overburden	TOPVC	119.57	47.65													16.31	103.3
NHP_MW-403SA	Shallow Overburden	TOPVC	123.88	22.5														
NHP_MW-404SA	Shallow Overburden	TOPVC	119.21	29.7														
NHP_MW-XXXX series wells were installed in 2018.																		
NHP_MW-XXXX series wells were installed in 2018.																		
NHP_MW-XXXX series wells were installed in 2018.																		
NHP_MW-XXXX series wells were installed in 2018.																		
NHP_MW-XXXX series wells were installed in 2018.																		
NHP_MW-400 series wells were installed in October 2012. No data exists for these locations prior to 2012.																		

TABLE 3 - HISTORICAL GROUNDWATER LEVEL MEASUREMENTS AND ELEVATION DATA

New Hampshire Plating Company Superfund Site
Merrimack, New Hampshire

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Monitoring Well Designation	Screened Geologic Unit	Measuring Point	Measuring Point Elevation (ft-NGVD)	Screen Bottom ¹	Aug-13		Jul-14		Jul-17		Jul-18		Oct-20		May-21	
					Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)	Depth to Water (ft bmp)	Elevation (ft)
NHP_MW-308DA	Deep Overburden	TOPVC	121.70	46.9	NHP_MW-XXXX series wells were installed in 2018.								21.57	100.1	---	---
NHP_MW-308R	Bedrock	TOPVC	121.05	159.6	19.22	101.8	19.12	101.9	17.81	103.2	19.05	102.0	20.11	100.9	---	---
NHP_MW-309S	Shallow Overburden	TOPVC	119.10	20.5	15.40	103.7	15.65	103.5	14.37	104.7	15.69	103.4	17.62	101.5	---	---
NHP_MW-309SA	Shallow Overburden	TOPVC	119.47	21.4	NHP_MW-XXXX series wells were installed in 2018.								18.00	101.5	---	---
NHP_MW-309D	Deep Overburden	TOPVC	119.61	69.9	16.63	103.0	16.67	102.9	15.18	104.4	16.45	103.2	17.66	102.0	---	---
NHP_MW-309DA	Deep Overburden	TOPVC	119.62	51.4	NHP_MW-XXXX series wells were installed in 2018.								17.88	101.7	---	---
NHP_MW-309R	Bedrock	TOPVC	119.64	150.7	17.07	102.6	17.07	102.6	15.72	103.9	16.87	102.8	17.97	101.7	---	---
NHP_MW-310S	Shallow Overburden	TOPVC	123.09	23.8	18.76	104.3	18.48	104.6	16.62	106.5	18.68	104.4	20.64	102.5	---	---
NHP_MW-310D	Deep Overburden	TOPVC	122.59	68.8	18.82	103.8	19.07	103.5	17.03	105.6	18.50	104.1	19.92	102.7	18.43	104.2
NHP_MW-311S	Shallow Overburden	TOPVC	123.91	19.5	18.18	105.7	17.84	106.1	16.91	107.0	18.03	105.9	18.95	105.0	---	---
NHP_MW-311D	Deep Overburden	TOPVC	124.33	65.9	20.15	104.2	20.49	103.8	18.11	106.2	19.82	104.5	21.44	102.9	---	---
NHP_MW-312S	Shallow Overburden	TOPVC	119.89	21.6	13.79	106.1	13.65	106.2	12.37	107.5	13.71	106.2	15.47	104.4	13.71	106.2
NHP_MW-312D	Deep Overburden	TOPVC	119.94	49.5	14.51	105.4	14.61	105.3	12.79	107.2	14.24	105.7	15.99	104.0	14.44	105.5
NHP_MW-400R ³	Bedrock	TOC	116.07	201.69	14.32	101.9	14.19	102.1	12.29	103.8	13.56	102.5	14.74	101.3	---	---
NHP_MW-401S	Shallow Overburden	TOPVC	120.22	27.8	16.00	104.2	16.00	104.2	14.52	105.7	15.82	104.4	17.12	103.1	---	---
NHP_MW-401D	Deep Overburden	TOPVC	119.74	47.6	15.90	103.8	15.79	104.0	14.36	105.4	15.62	104.1	16.95	102.8	---	---
NHP_MW-402D	Deep Overburden	TOPVC	119.57	47.65	14.98	104.6	15.36	104.2	13.11	106.5	14.76	104.8	16.37	103.2	14.55	105.0
NHP_MW-403SA	Shallow Overburden	TOPVC	123.88	22.5	NHP_MW-XXXX series wells were installed in 2018.								Dry	---	---	---
NHP_MW-404SA	Shallow Overburden	TOPVC	119.21	29.7	NHP_MW-XXXX series wells were installed in 2018.								19.07	100.1	---	---

TABLE KEY:

ft = feet

ft bmp = feet below measuring point

"---" = groundwater level information for these monitoring locations was not collected during the time period indicated.

GENERAL NOTES:

- * Depth to groundwater measurements are referenced to top of polyvinyl chloride (TOPVC) risers or top of casing (TOC) at groundwater monitoring wells as indicated.
- * Depth to groundwater measurements from 2010 through the present were collected by GZA. Measurements from 2009 were collected by Nobis Engineering, Inc. Measurements from 2007 and 2008 were collected by Tetra Tech, Inc.

SPECIFIC NOTES:

1. Information on screen bottoms, with the exception of three of the JCI property wells and the MW-400 well series, came from the Tetra Tech NPC QAPP 4, March 2008 table 8-2A4. Information for JCMW-4S, JCMW-4D, and JCMW-6 came from the boring logs by Wehran Engineering included in the JCI site file maintained at NHDES.
2. No groundwater level measurement was taken for MW-203S during 2011, 2013, and 2014 due to an obstruction in the well above the static water level. MW-203S was decommissioned and replaced with NHP_MW-203SX during 2016.
3. The top of casing at MW-400R was damaged and approximately two inches were removed during 2015. The measuring point elevation for MW-400R prior to 2015 was 116.26 feet.

TABLE 4 - SUMMARY OF DETECTED PFAS COMPOUNDS IN GROUNDWATER

New Hampshire Plating Company Superfund Site

Merrimack, New Hampshire

04.0190987.14

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Monitoring Well ID	Monitoring Well Location	Stratigraphic Unit	Sample ID	Sampling Event Date	Perfluoroalkyl Carboxylic Acids					Perfluoroalkyl Sulfonic Acids		Fluorotelomers	Parameter Calculations						
					Perfluorobutanoic Acid (PFBA) [4]	Perfluoropentanoic Acid (PFPeA) [5]	Perfluorohexanoic Acid (PFHxA) [6]	Perfluoroheptanoic Acid (PFHpA) [7]	Perfluooctanoic Acid (PFOA) [8]	Perfluorononanoic Acid (PFNA) [9]	Perfluooctanesulfonic acid (PFOS) [8S]	Perfluorooctanesulfonic acid (PFBS) [4S]	Perfluorobutanesulfonic Acid (PFHxS) [6S]	11H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Total PFOA + PFOS ¹	Total Measured PFAS	% PFOA vs. Total PFOA+PFOS	% PFOA + PFOS vs. Total PFOA+PFOS	
					CAS No.	375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	1763-23-1	375-73-5	355-46-4	27619-97-2	N/A	N/A	N/A	N/A
					AGQS (ng/L) ²	na	na	na	na	12	11	15	na	18	na	na	na	na	na
					EPASLS (ng/L) ³	na	na	na	na	40	na	40	40,000	na	na	na	na	na	na
					EPA Health Advisory (ng/L) ⁴	na	na	na	na	70	na	70	na	na	na	na	na	na	na
Field Samples																			
JCPROD-1	Jones Chemical, Inc.	Bedrock	NHP_JCPROD-1	May-21	4.73	9.16	9.96	7.21	33	< 1.76	3.03	5.34	2.48	< 1.76	36.0	74.9	92%	48%	
JCMW-2S		Shallow Overburden	NHP_JCMW-2S	May-21	< 1.84	< 1.84	< 1.84	< 1.84	20.6	< 1.84	3.49 F	< 1.84	< 1.84	< 1.84	24.1	24.1	86%	100%	
JCMW-2D		Deep Overburden	NHP_JCMW-2D	Jul-17	< 20	3.1	5	7.1	50	< 2	3.9	< 2	< 2	< 2	53.9	69.1	93%	78%	
			NHP_JCMW-2D DUP	Jul-17	< 20	3	4.5	6.8	41	< 2	3.9	< 2	< 2	< 2	44.9	59.2	91%	76%	
			NHP_JCMW-2D	Jul-18	2.96	4.72	7.31	7.41	52.3	< 1.85	3.93	< 1.85	< 1.85	9.66 B	56.2	88.3	93%	64%	
			NHP_JCMW-2D DUP	Jul-18	2.85	4.33	6.87	7.53	50.9	< 1.85	4.17	< 1.85	< 1.85	11.7 B	55.1	88.4	92%	62%	
JCMW-4S		Shallow Overburden	NHP_JCMW-4S	May-21	3.02	5.49	6.68	4.02	24.6	< 1.84	16.7	< 1.84	< 1.84	< 1.84	41.3	60.5	60%	68%	
JCMW-4D		Deep Overburden	NHP_JCMW-4D	Oct-20	3.78	7.29	9.98	9.38	58.6 F	2.19	4.57 F	< 1.86	< 1.86	< 1.86	63.2	95.8	93%	66%	
JCMW-6		Shallow Overburden	NHP_JCMW-6	May-21	7.02	11.8	21.1	19.8	79.5	< 1.87	17	< 1.87	6.05	< 1.87	96.5	162.3	82%	59%	
MW-102S	NHPC	Shallow Overburden	NHP_MW-102S	Jul-17	< 2	< 2	3.4	< 2	< 2	< 2	< 2	< 2	< 2	---	ND	3.4	N/A	N/A	
MW-102D		Deep Overburden	NHP_MW-102D	Jul-17	< 2	2.2	3.7	< 2	< 2	< 2	< 2	< 2	< 2	---	ND	5.9	N/A	N/A	
MW-102R		Bedrock	NHP_MW-102R	Jul-17	8.6	20	16	15	57	< 2	2.9	4.9	4.2	---	59.9	128.6	95%	47%	
B-10S	YMCA	Shallow Overburden	NHP_B-10S	Oct-20	3.16	5.34	7.91	7.09	45.4 F	< 1.83	3.65 F	5.46	5.13	< 1.83	49.1	83.1	93%	59%	
MW-106		Deep Overburden	NHP_MW-106	Jul-18	4.02	8.51	8.9	7.61	44.1	< 1.78	5.15	2.27	4.12	4.97 B	49.3	89.7	90%	55%	
MW-106R		Bedrock	NHP_MW-106	Oct-20	6.01	14.5	13.5	8.92	51.1 F	< 1.83	5.3 F	4.1	3.39	< 1.83	56.4	106.8	91%	53%	
			NHP_MW-106R	Jul-18	< 1.78	2.5	2.82	< 1.78	9.08	< 1.78	< 1.78	< 1.78	< 1.78	5.45 B	9.1	19.9	100%	46%	
NE Pole		Shallow Overburden	NHP_MW-108S	Apr-19	---	---	---	6.5	62	< 3.8	< 3.8	< 3.8	< 3.8	---	62.0	68.5	100%	91%	
		Shallow Overburden	NHP_MW-108S	Oct-20	2.57	4.56	5.12	4.2	30.4 F	< 1.81	< 1.81	< 1.81	< 1.81	< 1.81	30.4	46.9	100%	65%	
		Deep Overburden	NHP_MW-108D	Oct-20	2.66	5.01	5.59	4.74	34.8 F	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	34.8	52.8	100%	66%	
		Deep Overburden	NHP_MW-108D	Apr-19	---	---	---	< 4	19	< 4	< 4	< 4	< 4	---	19.0	19.0	100%	100%	
		Shallow Overburden	NHP_MW-109S	May-21	5.64	6.86	7.93	7.62	53.2	< 1.86	4.38	5.11	3.92	< 1.86	57.6	94.7	92%	61%	
		Shallow Overburden	NHP_MW-109S DUP	May-21	5.84	7.02	7.57	8.15	54.9	< 1.93	4.07	5.06	4.06	< 1.93	59.0	96.7	93%	61%	
		Deep Overburden	NHP_MW-109D	May-21	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	ND	ND	N/A	N/A		
		Bedrock	NHP_MW-109R	May-21	< 1.91	< 1.91	< 1.91	< 1.91	< 1.91	< 1.91	< 1.91	< 1.91	< 1.91	ND	ND	N/A	N/A		
		Shallow Overburden	NHP_MW-202S	Jul-18	2.48	4.74	5.53	4.25	37.2	< 1.78	1.96	< 1.78	1.99	10.2 B	39.2	68.4	95%	57%	
		Shallow Overburden	NHP_MW-202S DUP	Jul-18	2.76	5.06	5.66	4.69	38.1	< 1.78	< 1.78	< 1.78	< 1.78	10.4 B	38.1	66.7	100%	57%	
Equivise		Deep Overburden	NHP_MW-202D	Jul-18	3.28	6.68	7.8	5.82	29.9	< 1.78	3.14	2.23	2.93	3.86 B	33.0	65.6	90%	50%	
		Shallow Overburden	NHP_MW-203SX	Jul-18	10.9	42.3	62.8	14	132	< 1.85	2.93	< 1.85	2.55	12.6 B	134.9	280.1	98%	48%	
		Deep Overburden	NHP_MW-203D	Jul-18	2.16	4.02	3.8	3.29	18.8	< 1.85	3.23	< 1.85	3	17.5 B	22.0	55.8	85%	39%	
MW-203D		Deep Overburden	NHP_MW-203D	Oct-20	2.54	5.96	5.56	4.68	23.6 F	< 1.84	2.52	< 1.84	3.17	< 1.84	26.1	48.0	90%	54%	

TABLE 4 - SUMMARY OF DETECTED PFAS COMPOUNDS IN GROUNDWATER

New Hampshire Plating Company Superfund Site
Merrimack, New Hampshire

Monitoring Well ID	Monitoring Well Location	Stratigraphic Unit	Sample ID	Sampling Event Date	Perfluoroalkyl Carboxylic Acids					Perfluoroalkyl Sulfonic Acids			Fluorotelomers	Parameter Calculations					
					Perfluorobutanoic Acid (PFBA) [4]	Perfluoropentanoic Acid (PFPeA) [5]	Perfluorohexanoic Acid (PFHxA) [6]	Perfluoroheptanoic Acid (PFHpA) [7]	Perfluorooctanoic Acid (PFOA) [8]	Perfluorononanoic Acid (PFNA) [9]	Perfluorooctanesulfonic acid (PFOS) [8S]	Perfluorooctanesulfonic acid (PFBS) [4S]	Perfluorooctanesulfonic Acid (PFHxS) [6S]	11H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Total PFOA + PFOS ¹	Total Measured PFAS	% PFOA vs. Total PFOA+PFOS	% PFOA + PFOS vs. Total PFOA+PFOS	
					CAS No.	375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	1763-23-1	375-73-5	355-46-4	27619-97-2	N/A	N/A	N/A	N/A
					AGQS (ng/L) ²	na	na	na	na	12	11	15	na	18	na	na	na	na	na
					EPASLS (ng/L) ³	na	na	na	na	40	na	40	40,000	na	na	na	na	na	na
					EPA Health Advisory (ng/L) ⁴	na	na	na	na	70	na	70	na	na	na	na	na	na	na
MW-204S	Transsupport	Shallow Overburden	NHP_MW-204S	Oct-20	9.77	24	32.4	16.1	88.6 F	3.04	3.45 F	< 1.84	< 1.84	< 1.84	92.1	177.4	96%	52%	
MW-204D		Deep Overburden	NHP_MW-204D	Jul-18	< 1.85	< 1.85	< 1.85	< 1.85	2.97	< 1.85	< 1.85	< 1.85	< 1.85	10.9 B	3.0	13.9	100%	21%	
MW-204R		Bedrock	NHP_MW-204R	Jul-18	< 1.78	< 1.78	< 1.78	< 1.78	9.64	< 1.78	< 1.78	< 1.78	< 1.78	2.44 B	9.6	12.1	100%	80%	
MW-301S	Former YMCA	Shallow Overburden	NHP_MW-301S	Oct-20	4.42	6.14	7.85	6.79	47.2 F	< 1.87	2.34 F	3.79	2.21 F	< 1.87	49.5	80.7	95%	61%	
MW-301D		Deep Overburden	NHP_MW-301D	Apr-19	---	---	---	5.7	31	< 3.9	< 3.9	4.7	< 3.9	---	31.0	41.4	100%	75%	
MW-302S	NHPC	Shallow Overburden	NHP_MW-302S	Jul-17	2.2	3.3	3.6	4.1	29	< 2	< 2	< 2	< 2	---	29.0	42.2	100%	69%	
MW-302SA		Shallow Overburden	NHP_MW-302SA	Oct-20	< 1.81	2.88	3.08 F	2.24	20.4 F	< 1.81	< 1.81	< 1.81	< 1.81	< 1.81	20.4	28.6	100%	71%	
MW-302D		Deep Overburden	NHP_MW-302D	Oct-20	8.59	19.5	18.5	12.2	46.2 F	6.43	9.88 F	4.03	< 1.82	< 1.82	56.1	125.3	82%	45%	
MW-302DA		Deep Overburden	NHP_MW-302DA	Jul-17	< 20	6.6	8.5	11	87	< 2	4	< 2	2.5	---	91.0	119.6	96%	76%	
MW-303S		Shallow Overburden	NHP_MW-303S	Apr-19	---	---	---	< 4	37	< 4	< 4	< 4	15	---	37.0	52.0	100%	71%	
MW-303SA		Shallow Overburden	NHP_MW-303SA	Oct-20	2.71	4.67	6.69	7.48	68.4 F	< 1.83	4.06 F	< 1.83	2.16	< 1.83	72.5	96.2	94%	75%	
MW-303D		Deep Overburden	NHP_MW-303D	Jul-17	< 20	8.7	7.8	5.4	25	< 2	< 2	< 2	< 2	---	25.0	46.9	100%	53%	
MW-303DA		Deep Overburden	NHP_MW-303DA	Oct-20	8.34	12	15.4	11.2	68.6 F	< 1.91	3.06 F	2.9	1.97 F	< 1.91	71.7	123.5	96%	58%	
MW-304S		Shallow Overburden	NHP_MW-304S	May-21	4.92	5.4	7.18	5.67	61.5	< 1.83	6.66	< 1.83	< 1.83	< 1.83	68.2	91.3	90%	75%	
MW-304D		Deep Overburden	NHP_MW-304D	Apr-19	---	---	---	8.6	75	< 4	< 4	< 4	< 4	---	75.0	83.6	100%	90%	
MW-305S	Former YMCA	Shallow Overburden	NHP_MW-305S	Oct-20	6.78	12	17.2	15.7	118 F	< 1.8	4.11 F	< 1.8	< 1.8	< 1.8	122.1	173.8	97%	70%	
MW-305D		Deep Overburden	NHP_MW-305D	May-21	< 1.8	< 1.8	< 1.8	< 1.8	18.1	< 1.8	< 1.8	< 1.8	< 1.8	18.1	18.1	100%	100%		
MW-306S		Shallow Overburden	NHP_MW-306S	Apr-19	---	---	---	< 4	33	< 4	< 4	4.2	7.3	---	33.0	44.5	100%	74%	
MW-306D		Deep Overburden	NHP_MW-306D	Jul-18	5.6	11.3	15.6	9.59	50.1	< 1.78	6.02	4.89	4.03	10.8 B	56.1	117.9	89%	48%	
MW-307S		Shallow Overburden	NHP_MW-307S	May-21	6.84	11.2	11.7	9.43	62.7	< 1.82	2.25	3.07	2.03	< 1.82	65.0	109.2	97%	59%	
MW-307D		Deep Overburden	NHP_MW-307D	Jul-18	7.8	13.4	19.5	19.7	134	< 1.85	8.68	2.19	3.05	19.2 B	142.7	227.5	94%	63%	

TABLE 4 - SUMMARY OF DETECTED PFAS COMPOUNDS IN GROUNDWATER

New Hampshire Plating Company Superfund Site

Merrimack, New Hampshire

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Monitoring Well ID	Monitoring Well Location	Stratigraphic Unit	Sample ID	Sampling Event Date	Perfluoroalkyl Carboxylic Acids					Perfluoroalkyl Sulfonic Acids		Fluorotelomers	Parameter Calculations					
					Perfluorobutanoic Acid (PFBA) [4]	Perfluoropentanoic Acid (PFPeA) [5]	Perfluorohexanoic Acid (PFHxA) [6]	Perfluoroheptanoic Acid (PFHpA) [7]	Perfluooctanoic Acid (PFOA) [8]	Perfluorononanoic Acid (PFNA) [9]	Perfluooctanesulfonic acid (PFOS) [8S]	Perfluorooctanesulfonic acid (PFHxS) [4S]	Total PFOA + PFOS ¹	Total Measured PFAS	% PFOA vs. Total PFOA+PFOS			
					CAS No.	375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	1763-23-1	375-73-5	355-46-4	27619-97-2	N/A	N/A	N/A
					AGQS (ng/L) ²	na	na	na	na	12	11	15	na	18	na	na	na	na
					EPASLS (ng/L) ³	na	na	na	na	40	na	40	40,000	na	na	na	na	na
					EPA Health Advisory (ng/L) ⁴	na	na	na	na	70	na	70	na	na	na	na	na	na
MW-308S	NHPC	Shallow Overburden	NHP_MW-308S	Jul-18	19.5	29.1	59	49.4	171	< 1.78	< 1.78	7.81	8.55	16.9 B	171.0	361.3	100%	47%
MW-308SA			NHP_MW-308S	Oct-20	6.31	8.85	15.7	28.8	506 F	< 1.93	< 1.93	7.83	< 1.93	506.0	573.5	100%	88%	
MW-308D			NHP_MW-308S DUP	Oct-20	6.04	8.38	15.4	27.9	490 F	< 1.9	2.13 F	< 1.9	8.08	3.26 F	492.1	561.2	100%	88%
MW-308DA		Shallow Overburden	NHP_MW-308SA	Apr-19	---	---	---	5.8	68	< 4	< 4	< 4	< 4	< 1.86	68.0	73.8	100%	92%
MW-308R			NHP_MW-308SA	Oct-20	6.72	11.6	15.1	10.8	144 F	< 1.86	3.02 F	2.1	< 1.86	< 1.86	147.0	193.3	98%	76%
MW-309S		Deep Overburden	NHP_MW-308D	Jul-18	12.6	19.2	33	34.9	196	< 1.78	3.38	2.28	3.51	8.44 B	199.4	313.3	98%	64%
MW-309DA			NHP_MW-308D	Oct-20	8.25	14.9	22.9	23	162 F	< 1.86	3.86 F	2.06	2.14 F	< 1.86	165.9	239.1	98%	69%
MW-309R		Deep Overburden	NHP_MW-308DA	Apr-19	---	---	---	< 4	< 4	< 4	< 4	< 4	6.3	---	ND	6.3	N/A	N/A
MW-309SA			NHP_MW-308DA	Oct-20	< 1.88	< 1.88	< 1.88	< 1.88	< 1.88	< 1.88	2.77 F	< 1.88	< 1.88	< 1.88	2.8	2.8	0%	100%
MW-309D		Bedrock	NHP_MW-308R	Jul-18	4.66	8.92	11.5	9.39	44.1	2.35	2.32	3.65	3.66	10.3 B	46.4	100.9	95%	46%
MW-309DA			NHP_MW-308R	Jul-17	< 20	13	15	19	150	3.4	5.3	2.4	3.3	---	155.3	211.4	97%	73%
MW-310S		Shallow Overburden	NHP_MW-309S	Jul-18	7.8	11.2	15.4	16	145	2.26	5.46	< 1.85	2.1	5.78 B	150.5	211.0	96%	71%
MW-310D			NHP_MW-309SA	Apr-19	---	---	---	7.9	77	< 4	< 4	< 4	< 4	---	77.0	84.9	100%	91%
MW-311S		Deep Overburden	NHP_MW-309SA	Oct-20	8.11	13.1	15.9	12.5	97.1 F	< 1.81	3.27 F	< 1.81	< 1.81	< 1.81	100.4	150.0	97%	67%
MW-311D			NHP_MW-309D	Jul-17	2.9	6.5	8.8	9.7	64	< 2	2.7	< 2	2.5	---	66.7	97.1	96%	69%
MW-312S		Deep Overburden	NHP_MW-309DA	Apr-19	---	---	---	< 4	31	< 4	< 4	< 4	< 4	---	31.0	31.0	100%	100%
MW-312D			NHP_MW-309DA	Oct-20	1.85	3.62	5.16	5.3	37.2 F	< 1.82	3.04 F	< 1.82	< 1.82	< 1.82	40.2	56.2	92%	72%
MW-309R		Bedrock	NHP_MW-309R	Jul-17	8.9	10	15	11	45	< 2	4.8	6.6	3.3	---	49.8	104.6	90%	48%
MW-310S			NHP_MW-309R	Jul-18	4.62	9.12	11.2	8.83	42.9	< 1.78	4.71	6.56	3	7.39 B	47.6	98.3	90%	48%
MW-310D		Shallow Overburden	NHP_MW-310S	Oct-20	9.89	14.8	17.7	14.6	138 F	2.46	7.14 F	< 1.8	< 1.8	< 1.8	145.1	204.6	95%	71%
MW-311S		Deep Overburden	NHP_MW-310D	May-21	4.15	7.86	9.48	7.51	39.6	< 1.86	< 1.86	2.84	2.12	< 1.86	39.6	73.6	100%	54%
MW-311D		Shallow Overburden	NHP_MW-311S	Jul-17	23	28	32	14	9.8	< 2	< 2	4.1	< 2	---	9.8	110.9	100%	9%
MW-312S		Deep Overburden	NHP_MW-311D	Jul-17	2.3	4.8	4.8	6.2	28	< 2	2.2	< 2	2.2	---	30.2	50.5	93%	60%
MW-312D		Shallow Overburden	NHP_MW-311D	Oct-20	5.43	8.84	14.6	15.7	126 F	< 1.8	8.5 F	< 1.8	2.79	< 1.8	134.5	181.9	94%	74%
MW-400R	ACME	Bedrock	NHP_MW-400R	Apr-19	---	---	---	< 4	11	< 4	< 4	< 4	< 4	---	11.0	11.0	100%	100%
MW-401S		Shallow Overburden	NHP_MW-401S	Oct-20	4.25	5.25	5.73	4.19	24.3 F	< 1.81	3.04 F	< 1.81	< 1.81	< 1.81	27.3	46.8	89%	58%
MW-401D		Deep Overburden	NHP_MW-401D	Apr-19	---	---	---	5.2	38	< 3.8	< 3.8	< 3.8	4.9	---	38.0	48.1	100%	79%
MW-402D		Deep Overburden	NHP_MW-402D	May-21	5.35	8.08	10.2	7.21	26	2.61	2.83 F	< 1.83	< 1.83	< 1.83	28.8	62.3	90%	46%
MW-403SA	NHPC	Shallow Overburden	NHP_MW-403SA	Apr-19	---	---	---	6.7	84	< 4	< 4	< 4	< 4	---	84.0	90.7	100%	93%
MW-404SA		Shallow Overburden	NHP_MW-404SA	Apr-19	---	---	---	4.1	41	< 4	< 4	< 4	< 4	---	41.0	45.1	100%	91%
			NHP_MW-404SA	Oct-20	7.92	16.4	20.8	11.4	76.7 F	2.01	3.81 F	3	< 1.8	< 1.8	80.5	142.0	95%	57%

TABLE 4 - SUMMARY OF DETECTED PFAS COMPOUNDS IN GROUNDWATER

New Hampshire Plating Company Superfund Site
Merrimack, New Hampshire

Monitoring Well ID	Monitoring Well Location	Stratigraphic Unit	Sample ID	Sampling Event Date	Perfluoroalkyl Carboxylic Acids						Perfluoroalkyl Sulfonic Acids			Fluorotelomers	Parameter Calculations					
					Perfluorobutanoic Acid (PFBA) [4]	Perfluoropentanoic Acid (PFPeA) [5]	Perfluorohexanoic Acid (PFHxA) [6]	Perfluoroheptanoic Acid (PFHpA) [7]	Perfluooctanoic Acid (PFOA) [8]	Perfluorononanoic Acid (PFNA) [9]	Perfluooctanesulfonic acid (PFOS) [8S]	Perfluorooctanesulfonic Acid (PFBS) [4S]	Perfluorohexamersulfonic Acid (PFHxS) [6S]		Total PFOA + PFOS ¹	Total Measured PFAS	% PFOA vs. Total PFOA+PFOS	% PFOA + PFOS vs. Total PFAS		
					CAS No.	375-22-4	2706-90-3	307-24-4	375-85-9	335-67-1	375-95-1	1763-23-1	375-73-5	355-46-4	27619-97-2	N/A	N/A	N/A	N/A	
					AGQS (ng/L) ²	na	na	na	na	12	11	15	na	18	na	na	na	na	na	
					EPASLS (ng/L) ³	na	na	na	na	40	na	40	40,000	na	na	na	na	na	na	
					EPA Health Advisory (ng/L) ⁴	na	na	na	na	70	na	70	na	na	na	na	na	na	na	
2021 Field Quality Control Samples																	ND	ND	N/A	N/A
N/A	N/A	N/A	TRIP BLANK	May-21	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	ND	ND	N/A	N/A	
N/A	N/A	N/A	FIELD BLANK-DYRNESS	May-21	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	ND	ND	N/A	N/A	
N/A	N/A	N/A	FIELD BLANK-FULTON	May-21	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	< 1.78	ND	ND	N/A	N/A	
N/A	N/A	N/A	FIELD BLANK-MURPHY	May-21	< 1.77	< 1.77	< 1.77	< 1.77	< 1.77	< 1.77	< 1.77	< 1.77	< 1.77	< 1.77	< 1.77	ND	ND	N/A	N/A	
MW-307S	N/A	N/A	EQUIP BLANK (WLM)	May-21	<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	<1.81	ND	ND	N/A	N/A	

TABLE 4 - SUMMARY OF DETECTED PFAS COMPOUNDS IN GROUNDWATER

New Hampshire Plating Company Superfund Site
Merrimack, New Hampshire

04.0190987.14

Page 5 of 5

TABLE KEY:

PFAS = per- and polyfluoroalkyl substances

[4] = Number of fluorinated carbon chains for perfluorinated carboxylic acids

[4S] = Number of fluorinated carbon chains for perfluorinated sulfonic acids

EPA SLs = Screening levels provided by the United States Environmental Protection Agency, refer to text for more information

NH AGQS = New Hampshire Ambient Groundwater Quality Standards included in Env-Or 600 - Contaminated Site Management (Env-Or 603.03)

na = no current standard available

N/A = not applicable

ND = not detected above the laboratory reporting limit

B = indicates the analyte was detected above the reporting limit in an associated field or laboratory blank

F = The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

< = analyte not detected above the laboratory reporting limit

ng/L = nanograms per liter

Bold indicates that the concentration was detected above the laboratory reporting detection limit

Grey shading indicates the concentration exceeds the NHDES AGQS

Green shading indicates the concentration exceeds the NHDES AGQS and EPA screening level

Blue shading indicates the concentration exceeds the NHDES AGQS, EPA screening level, and EPA Lifetime Drinking Water Health Advisory

Orange shading indicates the most recently round of sampling data

GENERAL NOTES:

* GZA collected the 2021 samples for PFAS analysis and submitted the samples to Alpha Analytical Inc., of Mansfield, Massachusetts for analysis by US EPA Method 537 (modified) with isotope dilution.

* All concentrations reported in nanograms per liter (ng/L) which are roughly equivalent to parts per trillion (ppt).

* A total of 36 PFAS compounds were measured by the analyses. The presence or absence of other additional compounds has not been confirmed.

* In addition to the compounds included on this table, the following PFAS have been analyzed for and not detected above the laboratory reporting limit in drinking water supply samples:

Perfluoroalkyl carboxylic acids: PFDA [10], PFUnA [11], PFDaA [12], PFTrDA [13], PFTA [14], PFHxDA [16], PFODA [18]

Perfluoroalkyl sulfonic acids: PPoS [5], PFHpS [7], PFNS [9], PFDS [10], PFDoDS [12]

Fluorotelomers: 10:2FTS, 8:2FTS, 6:2FTS, 4:2FTS

Perfluoroalkane Sulfonamides (FASAs) and Sufonamido Substances: PFOSA, EtFOSA, MeFOSA, EtFOSE, MeFOSE, EtFOSAA, MeFOSAA

Ether carboxylic acids: HFPO-DA, ADONA

Additional PFAS: 9Cl-PF3ONS, 11Cl-PF3OUds

SPECIFIC NOTES:

1. Total PFOA & PFOS indicates the sum of the detected concentrations of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS).

2. Screening levels of 40 ng/L for PFOA and PFOS and 40,000 ng/L for Perfluorobutanesulfonic Acid (PFBS) were established by EPA to determine if the compounds are present at a Site and may warrant further attention.

3. During May 2016, EPA issued a Lifetime Drinking Water Health Advisory (EPA Health Advisory) level of 70 ng/L for PFOA, PFOS, and for both PFOA and PFOS combined where these chemicals are present together

4. Effective July 23, 2020, New Hampshire established AGQS for PFOA (12 ng/L), PFOS (15 ng/L), perfluorononanoic acid (PFNA, 11 ng/L), and perfluorohexane sulfonic acid (PFHxS, 18 ng/L).

TABLE 5 - RELATIVE PERCENT DIFFERENCE (RPD) CALCULATIONS FOR DUPLICATE SAMPLES

New Hampshire Plating Company Superfund Site

Merrimack, New Hampshire

04.0190987.14

Page 1 of 1

Well ID	Sample Date	Sample ID	Sample Type	Perfluoroalkyl Carboxylic Acids					Perfluoroalkyl Sulfonic Acids			
				Perfluorobutanoic Acid (PFBA) [4]	Perfluoropentanoic Acid (PFPeA) [5]	Perfluorohexanoic Acid (PFHxA) [6]	Perfluoroheptanoic Acid (PFHpA) [7]	Perfluoroctanoic Acid (PFOA) [8]	Perfluorobutanesulfonic Acid (PFBS) [4S]	Perfluorohexanesulfonic Acid (PFHxS) [6S]	Perfluoroctanesulfonic Acid (PFOS) [8S]	
				Units	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	ng/l	
MW-109S	5/5/2021	NHP_MW-109S	N	5.64	6.86	7.93	7.62	53.2	5.11	3.92	4.38	
		NHP_MW-109S DUP	FD	5.84	7.02	7.57	8.15	54.9	5.06	4.06	4.07	
				RPD	3.5%	2.3%	4.6%	6.7%	3.1%	1.0%	3.5%	7.3%
MW-307S	5/5/2021	NHP_MW-307S	N	6.84	11.2	11.7	9.43	62.7	3.07	2.03	2.25	
		NHP_MW-307S DUP	FD	6.6	11.1	11.6	9.76	59.2	2.98	2.04	2.58	
				RPD	3.6%	0.9%	0.9%	3.4%	5.7%	3.0%	0.5%	13.7%

TABLE KEY:

DUP = Duplicate sample

RPD = Relative Percent Difference

ng/l = nanograms per liter

< = analyte not detected above the laboratory reporting limit

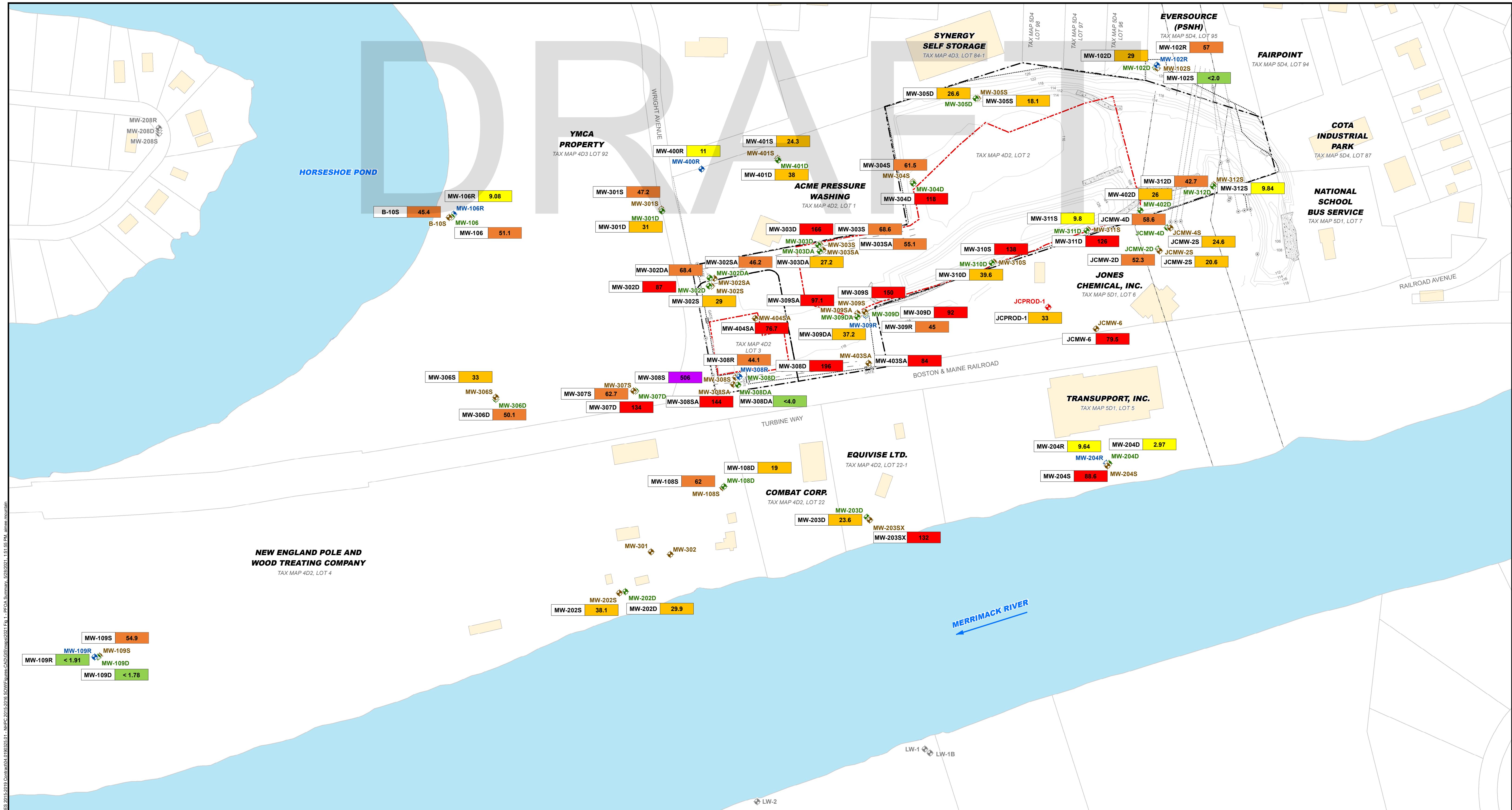
Bold indicates that the concentration was detected above the laboratory reporting detection limit

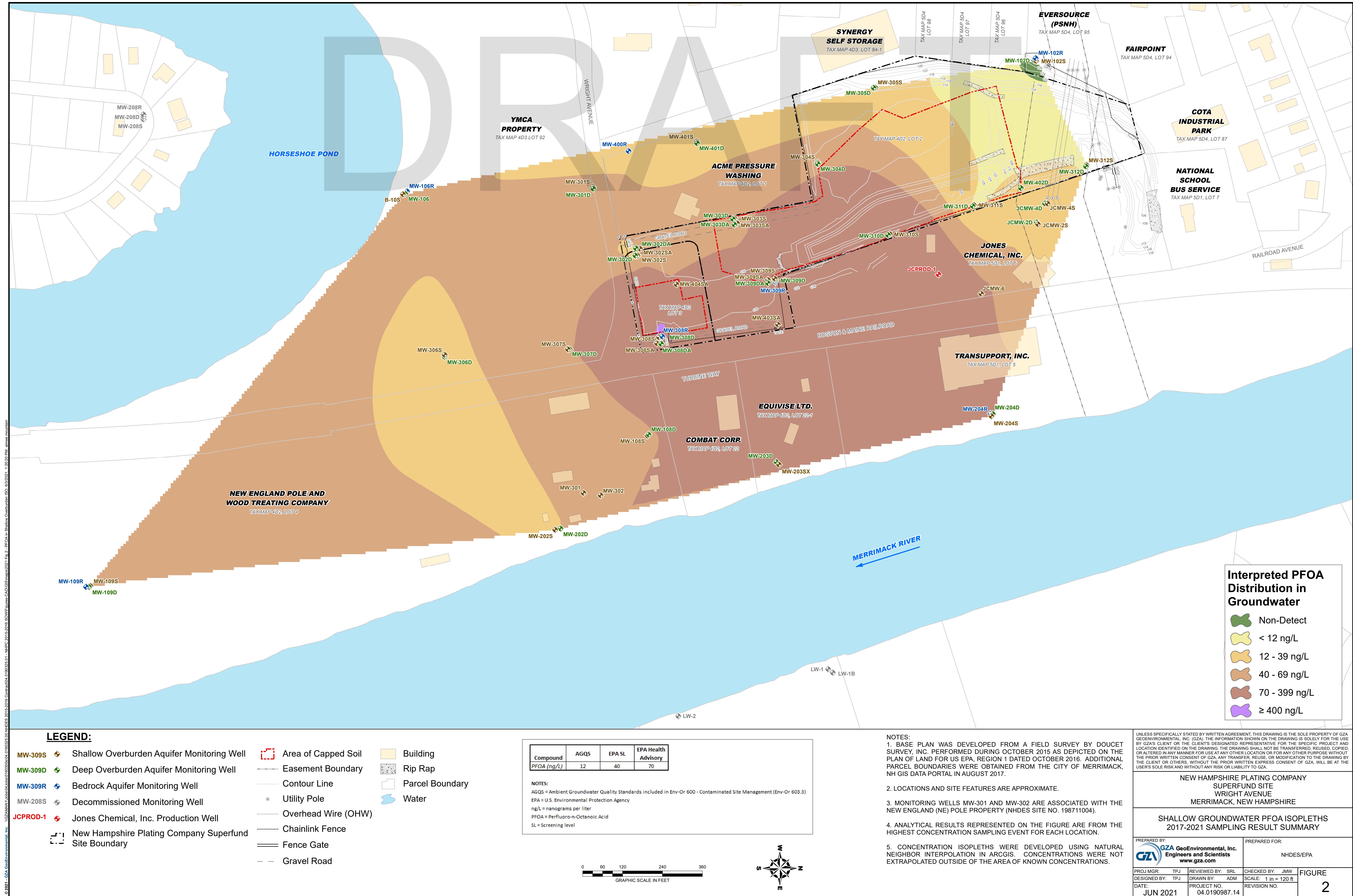
Green shading indicates the RPD exceeded the acceptance criteria of 30% for aqueous samples

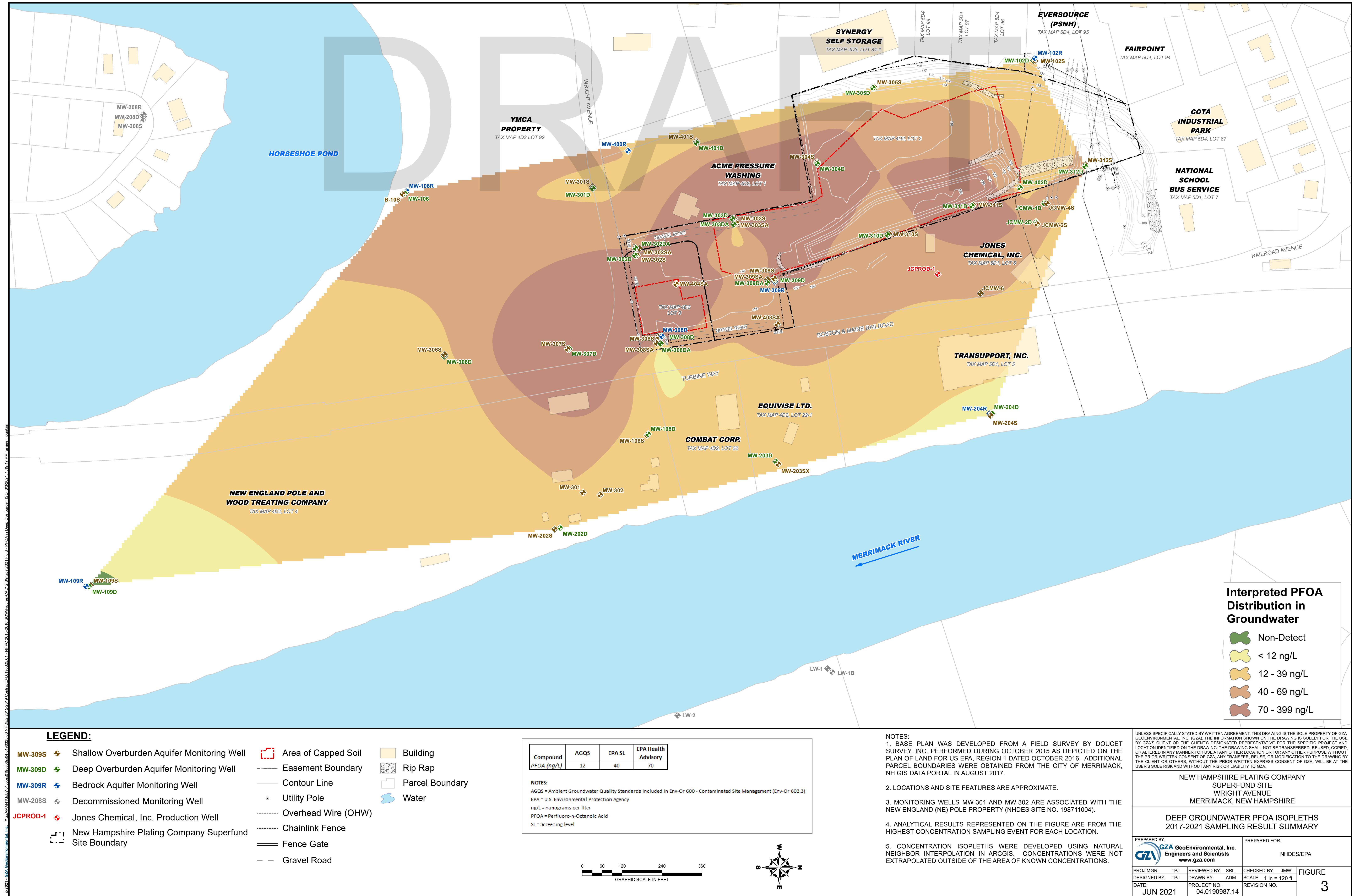


DRAFT

Figures









DRAFT

Limitations



DRAFT

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Proposal for Services and/or Report and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).
3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its study. Additionally, GZA makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by a local, state or federal agency.
4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.
6. Water level readings have been made, as described in this Report, in and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.

COMPLIANCE WITH CODES AND REGULATIONS

7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations and compliance with codes and regulations by other parties is beyond our control.



SCREENING AND ANALYTICAL TESTING

8. GZA collected environmental samples at the locations identified in the Report. These samples were analyzed for the specific parameters identified in the report. Additional constituents, for which analyses were not conducted, may be present in soil, groundwater, surface water, sediment and/or air. Future Site activities and uses may result in a requirement for additional testing.
9. Our interpretation of field screening and laboratory data is presented in the Report. Unless otherwise noted, we relied upon the laboratory's QA/QC program to validate these data.
10. Variations in the types and concentrations of contaminants observed at a given location or time may occur due to release mechanisms, disposal practices, changes in flow paths, and/or the influence of various physical, chemical, biological or radiological processes. Subsequently observed concentrations may be other than indicated in the Report.

INTERPRETATION OF DATA

11. Our opinions are based on available information as described in the Report, and on our professional judgment. Additional observations made over time, and/or space, may not support the opinions provided in the Report.

ADDITIONAL INFORMATION

12. In the event that the Client or others authorized to use this report obtain additional information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

13. GZA recommends that we be retained to provide services during any future investigations, design, implementation activities, construction, and/or property development/ redevelopment at the Site. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.



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Field Notes

NHPC SUPERFUND SITE

5-3-2021⁴¹

Merrimack, NH

04.0190987.14

TIME ONSITE: 0830 - 1450

WEATHER: Partly cloudy, 60s-70s

PERSONNEL: Megan Murphy (MEM) - notetaker → on-site @ 1100

ADD PERSONNEL: Beth Fulton (EAF), Erik Dymness (EBD)

TASK: Begin Superfund 2021 supplemental event

EQUIP: **UNIT #2**

↳ PFAS only

- Eriopump # 046357
- Heron Skinny Dipper # 035954
- Hach 2100Q # 3387
- Aquatroll 600 # 693538

0830 - MEM and EAF on-site

- * ↳ performed cal. checks on all Units (#1-3)
 - ↳ performed H+S meeting
 - ↳ prep for sampling

* ORP on Unit #3 was re-cal'd with new solution

1020 - Setup at NHP-MN-312S

- Decon with PFAS-free DI water

↳ Confirmed with TPS that although ^{MEM} top
water level is below top of screen,
well will be low-flow sampled

• SEE LOW-FLOW SHEETS

FOR SAMPLING DETAILS •

→
Rite in the Rain.

⁴² cont...

NHPC Superfund Site

04.0190987.14

5-3-2021

1115 - PFAS field blank (-MURPHY) collected

1120 - Sample start
↳ PFAS

1125 - Sample end; pump off

1150 - Setup at NHP-MW-312D
- Decon with PFAS-free DI water
• SEE LOW FLOW SHEETS
FOR SAMPLING DETAILS •

1245 - Sample start
↳ PFAS

1250 - Sample end - pump off

1320 - Tanya Justham on-site

1340 - Return to Base Camp
↳ returned equipment for transport
overnight storage
↳ performed COC and bottle checks

1450 - GZA off-site, gate locked

mem
5-3-21

NHPC SUPERFUND SITE

5-4-21 ⁴³

Merrimack, NH

04.0190987.14

TIME ONSITE: 0730-

WEATHER: Rain in morning, overcast afternoon; 40°

PERSONNEL: Megan Murphy (MEN) - notetaker

ADD PERSONNEL: Beth Fulton (EAF), Erik Dymess (EBD)

TASK: Continue 2021 PFAS Supplemental GW sampling

EQUIP: UNIT #2 (refer to 5-3-21 notes)

0730 - GZA on-site

- ↳ performed H+S tailgate meeting
- ↳ prep. for sampling
- ↳ EAF and EBD off-site for JCI samples

0815 - Setup at NHP-MW-H02D

- Decon w/ PFAS-free DI water
- SEE LOW FLOW SHEETS
FOR SAMPLING DETAILS •

0950 - Sample start

- ↳ PFAS

1000 - Sample end; pump off

1015 - Mob. to MW-310D



Rite in the Rain.

⁴⁴ cont... NHPC Superfund Site
04.0190987.14

5-4-21

- DRAFT
- 1030 - Setup at NHP-MW-310D
- Decon with PFAS-free DI water
④ SEE LOW FLOW SHEETS
FOR SAMPLING DETAILS
→ DO stabilized at slightly higher concentration
than 2018 sampling event
- 1115 - Sample start
↳ PFAS
- 1125 - Sample end; pump off
- 1145 - Prep for sampling MW-109D
- 1200 - Left site to assist EBD with loading
equipment/break down
↳ proceeded to MW-109D (Ne Pole property)
- 1230 - Assist EAF with sampling NHP-MW-109D
- 1400 - Return to Base Camp
↳ COC and bottle check
↳ Unit #3 cal check failed → qualified
JCPROD-1, MW-2S, and MW-6
- 1505 - GZA off-site, locked gate

NHPC SUPER FUND SITE

5-5-21⁴⁵

Memimack, NH

04.0190987.14

Time onsite: 0800 -

Weather: 40s-50s, overcast, Sprinkling

Personnel: Megan Murphy (MEM) - notetaker

ADD. Personnel: Beth Fulton (EAF), Erik Dymess (EBD)

TASK: Complete 2021 PFAS Sampling event

EQUIP: Unit #2 (refer to 5-3-21 notes)

↳ QEDT-1250 MP-10 controller #MP-10-3585

0800 - GZA on-site

↳ prep for Sampling

↳ perform H+S tailgate meeting

0815 - MEM and EAF off-site to NE Pole property

0845 - Setup at NHP-MW-109S

- Decon with PFAS-free DI water

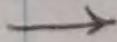
• SEE LOW FLOW SHEETS

FOR SAMPLING DETAILS •

1030 - Sample start

↳ PFAS + PFAS DUP

1050 - Sample end; pump off



Rite in the Rain

NHPC Superfund Site

04.0190987.14

5-5-21

1130 - Returned to Base Camp

↳ COC and bottle checks

↳ breakdown and pack Base Camp

↳ notify rental company equipment was
ready for pickup**1230 - GZA off-site, gate locked**mem
5-5-21

Location Merrimack, NH Date 5/3/21

3

Project / Client New Hampshire Plotting Company
Superfund Site, 04.0190987.14

Onsite: 1100 - 1450

Weather: Sunny, 60s, slight breeze

Personnel: E. Dynness (ETBD) (note taker)

M. Murphy (MEM), E. Fulton (EAF)

Purpose: Ground water sampling

Equipment: Unit 3

- GeoPump # 19541

- Solinst # 047861

- Hach 2100Q # 3345

- Aquatroll # 685779

1100 ETBD onsite

1110 Set up on MW-304S

using Kit 3

WL cleaned w/ PFAS free
water

See low flow sheet for
additional sample details

1208 Field Blank - Dynness

collected for PFAS prior
to Sampling GW.



4 Location Merrimack, NH Date 5/3/21
Project / Client New Hampshire Plating Company
Superfund Site, 04.0190987. 14

1245 Helped EAF & MEM
demob off wells

1345 Returned to base camp
and packed up all equipment
and prepped for next day's
Sampling

Called Kevin @ TCI to
let them know we would
be onsite 5/4

1450 All personnel offsite

MEM
5-3-21

Location Merrimeek, NH Date 5/4/21 5

Project / Client New Hampshire Plating Company
Superfund Site, 04.0190987.14

Onsite: 0730 - 1505

Weather: Overcast, 40s, slight breeze

personnel: E. Dyness (EBD) (notetaker)

M. Murphy (MEM), C. Fulton (EAF)

Purpose: Ground water sampling

Equipment: Using Unit 3, see details 5/3

0730 EBD, MEM, EAF onsite

prepped equipment for the day

0815 EBD & EAF offsite to JCI

checked in w/ Jessica in office

Roger met us in parking lot
and took EBD into building
for production well sample

Roger confirmed well had
been running that day ad
on 5/3.



6

Location

Merrimack, NH

Date

5/4/21

Project / Client New Hampshire Plating Company
Superfund Site, 09.0190287.14

0830 Sample collected from
JCProd-1

Turbidity aliquot collected
1/4 bucket of water was
collected for field screening

w/ Aqua trott

Turb: < 5

DO: 5.5 mg/L

pH: 7.6

Sc: 686 $\mu\text{S}/\text{cm}$

Temp: 11 °C

Orp: 125 mV

Parameters stabilized over
5 mins

0845 Set up on JCMW-6

using Kit 3

WL cleaned w/ PFAS free
water

Tubing intake moved from
22.6 → 23.9 from PVC
according to table 4.



Location Merrimack, NH Date 5/4/21 7
Project / Client New Hampshire Plating Company
Superfund Site, 04.0190987.14

See low flow sheet for additional sample details.

1025 Set up on JCMW-2S
using Kit 3

WL cleaned w/ PFAS free water

Tubing intake moved from
20.3 → 21.1 from PVC
according to Table 4

See low flow sheet for additional sample details

1215 EBD returned to site to repair equip damaged by wind

1245 Returned to base camp to put away equip and prep for 5/5



8

Location Merrimack, NH

Date

5/4/21

Project / Client New Hampshire Plating Company
Superfund Site, 04.0190987.14

ETSD & MEM checked bottles
and prepped coolers

Assisted EAF w/ end of day
cal check

Unit 3 ORP, did not pass

JCPROD-1

JCMW-6

JCMW-2S

qualified for ORP

All other meters and parameters
checked

1505 All personnel offsite

MEM
5-4-21

Location Merrimack, NH Date 5/5/21

9

Project / Client New Hampshire Plating Company
Superfund Site, 04.0190 987.14

Onsite: 0800 - 1230

weather: 40S-50S, overcast, rainy

personnel: E. Dymess (ETSD) (notetaker)

M. Murphy (MEM), E. Fulton (EAF)

Purpose: Groundwater Sampling

Equipment: Using unit 3, see details 5/3

0800 ETSD, MEM, EAF onsite

prep equipment for the day

0815 Set up on MW-3073

using Kit 3

WL cleaned w/ PFAS free water

See low flow sheet for additional sample details

1015 Cleaned WLM and collected equipment blank for PFAS

1000 Assisted w/ the sampling and breakdown of the MW-109's



10

Location Merrimack, NH

Date

5/5/21

Project / Client New Hampshire Plating Company
Superfund Site, 04.0190982.14

1140

Returned to base camp
Started end of day col
checks
All units passed

Base camp and equipment
packed up

1230

All personnel offsite

mem
5-5-21

5/3/21 NHPC 04.0190987.14
Superfund Site

(62)

Weather: sunny, 50s-60s

personnel: Beth Fulton (EAF) - note taker
megan Murphy (MEM)
Erik Dymness (EBD)

Purpose: low flow GW sampling for PFAS

Equipment: Unit 1

- Geo pump: 19063
- Solinst WL: 039547
- + Hach Turbid.meter: 4448
- 5 Aquatroll: 695992

0845 MEM, EAF on-site

0855 Began calibration checks

0950 re-calibrated ORP for Unit 3

Aquatroll (S/N: 685779)

1000 Assisted MEM in setting up
on MW-312S

1010 Set-up on MW-305S, Decon with

1040 A man from the Synergy Self

Storage property stopped by the fence to
ask what the NHPC Superfund site is.

I informed him we sample groundwater
for the state.

1100 EBD on site

PFAS
Free
water



70 5/3/21

CONT

NHPC 04.0190987.14
Superfund Site

1125 collected PFAS Field Blank

1130 Sampling start, end at 1137

- Sampled for PFAS

- See low flow sheet for sampling details.

1137 pump off

1150 Set-up on MW-305D

- Decon with PFAS free water

- See low flow sheet for sampling details.

1235 Sampling start, end at 1241

- PFAS

1241 pump off

1250 return to base camp, prep for calibration checks

1320 - perform cal checks

1340 Tonya Justhan on-site

1415 GZA off site

1445 Return to site to finish breakdown
for the day

1450 off site - headed to the office

EAF 5/3/21

5/4/21 NTPC 04.0190987.14
superfund site

71

0730 on-site

Weather: AM rain, cloudy, 40s

personnel: Beth Fulton (EAF) - note taker
Megan Murphy (MEM)
Erik Dyrness (EBD)

purpose: low flow GW sample for PFAS

Equipment: Unit 1, See notes from 5/3/21

0800, EAF, EBD off-site, heading to JCI

property

0815 signed in and received visitor
pass from JCI

0820 set up on JCMU-4S

- Decon with PFAS Free Water
- See low flow sheet for sampling details.
- adjusted tubing intake depth from 20.7ft
to 21.6 ft, added blue zip tie

1015 sampling start end at 1028

-PFAS

1028 pump off

1100 return to base camp to cal. check
Specific conductivity.

- cal check passed

1200 - off Site with MEM to NE Pole
Property, set up on MW-109 D

(72)

5/4/21 NTPC 04.0190987.14
con't Superfund Site

- Decon at MW-10QD with PFAS free water; dedicated QEDT1200 Bladder pump? MP-10 controller
(MP-10 #3584)
- See low flow sheet for Sampling detail
- 1320 Sampling start, end at 1329
 - PFAS
- 1340 pump off
- 1400 Return to base camp
 - perform calibration checksAquatrol Unit #3 failed ORP check, had to qualify wells

1505 off site, heading to office

EAF

5/4/21

5/5/21

NHPC 04.0190987.14
superfund site

(73)

0800 on-site

Weather: 40s-50s light rain / cloudy

Personnel: Beth Fulton (EAF) - note taker

Megan Murphy (MEM)

Erik Dyrness (EBD)

Equipment: Unit 1. See notes from 5/3/21

- MP10-3584

- QEI) 1250

Purpose: finish low flow GW sampling for PFAS

0815 - off-site, EAF and MEM to NE Pole property, locked site gate

0830 - Set up on MW-109R

- Decon with PFAS free water

- See low flow sheet for sampling details.

1035 - sampling start, end at 1035

- PFAS

1051 - Pump off

1130 - Return to base camp

- Assist MEM with COGs

- Base camp break down

1230 - off-site, locked gate, heading to office to unload equipment

EAF
5/5/21



DRAFT

Low Flow Well Purging Field Water Quality Measurement Forms

Low-Flow Test Report:

Test Date / Time: 5/4/2021 10:54:33 AM

Project: NHP_JCMW-2S NHPC Superfund Site (2)

Operator Name: E. Dyrness

Location Name: NHP_JCMW-2S Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 12.6 ft Total Depth: 22.6 ft Initial Depth to Water: 17.45 ft	Pump Type: Peristaltic Pump Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 25.1 ft Pump Intake From TOC: 21.1 ft Flow Cell Volume: 130 ml Final Flow Rate: 50 ml/min Final Draw Down: 0.03 ft	Instrument Used: Aqua TROLL 600 Serial Number: 685779
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: 19541

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100 Q 3345

PVR (including calculations): $(21.1 \text{ ft} + 4 \text{ ft}) \times 9.7 \text{ ml/ft} = 244 \text{ ml}$

Maximum allowable drawdown rate: 0.02 ft / 5 min

Is #14 tubing used at this location? Yes

DURING/AFTER SAMPLING:

Pump start time: 1045

Parameters reached stabilization? Yes

If no, list parameters: n/a

Total volume purged prior to sampling: 1.5L

Minimum PVR reached (compare purge amount to PVR)? Yes, 1.5L > 244 ml

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): no

Condition that triggered Modified Sampling: n/a

Any adjustments made (including flow rates, tubing, etc.): intake moved from 20.3 to 21.1. Low flow sample collected from below top of screen in accordance with SAP and DES instruction.

MeM 5/1/21

Notes (i.e. bubbles in tubing): bubbles in tubing, removed as necessary

Final water level: 17.48ft

MeM 5/1/21

Total actual volume purged: 1.75L

Measured Well Depth, if required: n/a

Pump Off: 1135

Weather Conditions:
Overcast, 40s, slight breeze

DRAFT



Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 5	
5/4/2021 10:54 AM	00:00	6.09 pH	11.72 °C	122.25 µS/cm	8.69 mg/L	N/A -23.05 NTU	136.5 mV	17.45 ft	50.00 ml/min
5/4/2021 10:59 AM	05:00	6.10 pH	11.40 °C	111.64 µS/cm	8.24 mg/L	8 10.55 NTU	128.4 mV	17.47 ft	50.00 ml/min
5/4/2021 11:04 AM	10:00	6.19 pH	11.35 °C	110.25 µS/cm	7.91 mg/L	7 6.87 NTU	126.2 mV	17.47 ft	50.00 ml/min
5/4/2021 11:09 AM	15:00	6.28 pH	11.47 °C	110.44 µS/cm	8.11 mg/L	5 1.87 NTU	119.6 mV	17.48 ft	50.00 ml/min
5/4/2021 11:14 AM	20:00	6.29 pH	11.48 °C	109.86 µS/cm	8.13 mg/L	5 -0.08 NTU	120.4 mV	17.48 ft	50.00 ml/min
5/4/2021 11:19 AM	25:00	6.28 pH	11.51 °C	110.15 µS/cm	8.18 mg/L	5 -0.23 NTU	122.7 mV	17.48 ft	50.00 ml/min

MeM 5/7/21

Samples

Sample ID:	Description:
NHP_JCMW-2S	1120-1135 PFAS

★ DO concentrations have been variable at this well. MeM 5/7/21

Low-Flow Test Report:

Test Date / Time: 5/4/2021 9:27:02 AM
Project: NHP_JCMW-4S NHPC Superfund (2)
Operator Name: Beth Fulton

Location Name: NHP_JCMW-4S Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 12.7 ft Total Depth: 22.7 ft Initial Depth to Water: 18.83 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 25.6 ft Pump Intake From TOC: 21.6 ft Flow Cell Volume: 130 ml Final Flow Rate: 60 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695992
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: 19063

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): HACH 2100Q 4448
SOLINST WL 039547

PVR (including calculations): (21.6 ft +4 ft) x 9.7 ml/ft = 248mL

Maximum allowable drawdown rate: 0.02 ft/5min

Is #14 tubing used at this location? Yes

DURING/AFTER SAMPLING:

Pump start time: 0903

Parameters reached stabilization? Yes

If no, list parameters: N/A

Total volume purged prior to sampling: 2.8L

Minimum PVR reached (compare purge amount to PVR)? Yes, 2,800mL > 248mL

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: N/A

Any adjustments made (including flow rates, tubing, etc.): Yes, the tubing intake depth was adjusted from 20.7 ft to 21.6 ft. At the 10 minute time interval the water level was stable, increased flow rate.

Notes (i.e. bubbles in tubing): High RDO levels consistent with the previous sample round.

Final water level: 18.84 ft

Total actual volume purged (Don't enter estimated purge volume): 3L

Measured Well Depth, if required: N/A

Pump Off: 1028

Weather Conditions:
Cloudy, 40s

DRAFT

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/4/2021 9:27 AM	00:00	6.80 pH	12.42 °C	2.51 µS/cm	10.28 mg/L	<5 -0.00 NTU	91.4 mV	18.83 ft	50.00 ml/min
5/4/2021 9:32 AM	05:00	6.77 pH	11.68 °C	2.49 µS/cm	10.29 mg/L	<5 -0.00 NTU	89.4 mV	18.83 ft	50.00 ml/min
5/4/2021 9:37 AM	10:00	6.80 pH	11.32 °C	2.36 µS/cm	10.46 mg/L	<5 -0.00 NTU	86.8 mV	18.83 ft	60.00 ml/min
5/4/2021 9:42 AM	15:00	6.86 pH	10.93 °C	0.36 µS/cm	9.65 mg/L	<5 -18.25 NTU	90.4 mV	18.83 ft	60.00 ml/min
5/4/2021 9:47 AM	20:00	6.82 pH	10.85 °C	0.17 µS/cm	9.61 mg/L	<5 -15.55 NTU	103.9 mV	18.83 ft	60.00 ml/min
5/4/2021 9:52 AM	25:00	6.86 pH	10.80 °C	0.11 µS/cm	9.74 mg/L	<5 -16.06 NTU	112.4 mV	18.83 ft	60.00 ml/min
5/4/2021 9:57 AM	30:00	6.91 pH	10.75 °C	0.09 µS/cm	9.68 mg/L	<5 -10.85 NTU	117.7 mV	18.83 ft	60.00 ml/min
5/4/2021 10:02 AM	35:00	6.84 pH	10.66 °C	0.08 µS/cm	9.67 mg/L	<5 -10.78 NTU	121.6 mV	18.83 ft	60.00 ml/min
5/4/2021 10:07 AM	40:00	6.82 pH	10.57 °C	0.08 µS/cm	9.81 mg/L	<5 -9.78 NTU	124.7 mV	18.83 ft	60.00 ml/min
5/4/2021 10:12 AM	45:00	6.82 pH	10.49 °C	0.08 µS/cm	9.72 mg/L	<5 -12.98 NTU	126.8 mV	18.83 ft	60.00 ml/min

MeM 5/7/21

Samples

Sample ID:	Description:
NHP_JCMW-4S	Sample Start Time: 1015 Sample End Time: 1028 Parameters: PFAS NO QA/QC samples collected

Low-Flow Test Report:

Test Date / Time: 5/4/2021 9:22:34 AM

Project: NHP_JCMW-6 NHPC Superfund Site (2)

Operator Name: E. Dyrness

Location Name: NHP_JCMW-6 Well Diameter: 2 in Casing Type: PVC Screen Length: 15 ft Top of Screen: 10.7 ft Total Depth: 25.7 ft Initial Depth to Water: 20.2 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 26.9 ft Pump Intake From TOC: 23.9 ft Flow Cell Volume: 130 ml Final Flow Rate: 55 ml/min Final Draw Down: 0.05 ft	Instrument Used: Aqua TROLL 600 Serial Number: 685779
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: 19541

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100 Q 3345

PVR (including calculations): $(23.9 \text{ ft} + 3 \text{ ft}) \times 9.7 \text{ ml/ft} = 261 \text{ ml}$

Maximum allowable drawdown rate: 0.02 ft / 5 min

Is #14 tubing used at this location? Yes

DURING/AFTER SAMPLING:

Pump start time: 0910

Parameters reached stabilization? Yes

If no, list parameters: n/a

Total volume purged prior to sampling: 2L

Minimum PVR reached (compare purge amount to PVR)? Yes, 2L > 261 ml

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): no

Condition that triggered Modified Sampling: n/a

Any adjustments made (including flow rates, tubing, etc.): no

Notes (i.e. bubbles in tubing): bubbles in tubing, removed as necessary

Final water level: 20.25 ft *MeM 5/1/21*

Total actual volume purged: 2.25 L

Measured Well Depth, if required: n/a

Pump Off: 1010

Weather Conditions:
Overcast, 40s, slight breeze

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 5	
5/4/2021 9:22 AM	00:00	6.32 pH	11.58 °C	877.92 µS/cm	5.83 mg/L	N/A 51.51 NTU	132.1 mV	20.20 ft	50.00 ml/min
5/4/2021 9:27 AM	05:00	6.32 pH	11.34 °C	885.58 µS/cm	5.17 mg/L	72 90.89 NTU	125.5 mV	20.24 ft	50.00 ml/min
5/4/2021 9:32 AM	10:00	6.33 pH	11.36 °C	875.78 µS/cm	5.07 mg/L	68 69.13 NTU	125.4 mV	20.24 ft	50.00 ml/min
5/4/2021 9:37 AM	15:00	6.34 pH	11.29 °C	849.36 µS/cm	4.87 mg/L	70 77.02 NTU	124.8 mV	20.25 ft	50.00 ml/min
5/4/2021 9:42 AM	20:00	6.36 pH	11.25 °C	767.89 µS/cm	4.78 mg/L	35 30.36 NTU	126.6 mV	20.25 ft	50.00 ml/min
5/4/2021 9:47 AM	25:00	6.37 pH	11.33 °C	748.13 µS/cm	4.67 mg/L	32 25.68 NTU	123.7 mV	20.25 ft	55.00 ml/min
5/4/2021 9:52 AM	30:00	6.37 pH	11.35 °C	740.08 µS/cm	4.65 mg/L	30 16.08 NTU	121.2 mV	20.25 ft	55.00 ml/min
5/4/2021 9:57 AM	35:00	6.37 pH	11.31 °C	736.89 µS/cm	4.67 mg/L	32 7.90 NTU	120.7 mV	20.25 ft	55.00 ml/min

Mem 5/1/21

Samples

Sample ID:	Description:
NHP_JCMW-6	1000-1010 PFAS

Low-Flow Test Report:

Test Date / Time: 5/5/2021 9:29:45 AM

Project: NHP_MW-109S NHPC Superfund Site (2)

Operator Name: M. Murphy

Location Name: NHP_MW-109S Well Diameter: 2 in Casing Type: PVC Screen Length: 20 ft Top of Screen: 17.8 ft Total Depth: 37.8 ft Initial Depth to Water: 26.2 ft	Pump Type: Bladder Tubing Type: Polyethylene Tubing Inner Diameter: 0.17 in Tubing Length: 36.4 ft Pump Intake From TOC: 33.9 ft Flow Cell Volume: 130 ml Final Flow Rate: 94 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695538
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: QED T1250 T1250 Model MP-10-3585

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100Q Model 3387

Water Level: 035954

PVR (including calculations): $[(33.9 \text{ ft} + 2.5 \text{ ft}) \times 4.5 \text{ mL/ ft}] + 100 \text{ mL} = 263.8 \text{ mL}$

Maximum allowable drawdown rate: 0.02ft per 5mins

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 0925

Parameters reached stabilization? Yes

If no, list parameters: NA

Total volume purged prior to sampling: 5.0 L

Minimum PVR reached (compare purge amount to PVR)? Yes, 5.0L > 263.8 mL

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: NA

Any adjustments made (including flow rates, tubing, etc.): NA

Notes (i.e. bubbles in tubing): NA

Final Pump Pressure: 25 psi

Final Discharge Time: 14 seconds

Final Refill Time: 46 seconds

Final water level: 26.20 ft

MeM 5/7/21

Total actual volume purged (Don't enter estimated purge volume): 6.0 L

Measured Well Depth, if required: NA

Pump Off: 1050

Weather Conditions:
Cloudy with rain, 50s

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/5/2021 9:29 AM	00:00	5.94 pH	11.61 °C	275.08 µS/cm	4.95 mg/L	N/A -0.00 NTU	112.5 mV	26.20 ft	94.00 ml/min
5/5/2021 9:34 AM	05:00	5.86 pH	11.60 °C	346.33 µS/cm	1.72 mg/L	<5 -0.00 NTU	129.6 mV	26.20 ft	94.00 ml/min
5/5/2021 9:39 AM	10:00	5.87 pH	11.59 °C	351.00 µS/cm	1.48 mg/L	<5 -0.00 NTU	145.5 mV	26.20 ft	94.00 ml/min
5/5/2021 9:44 AM	15:00	5.89 pH	11.57 °C	359.95 µS/cm	1.23 mg/L	<5 -0.00 NTU	148.2 mV	26.20 ft	94.00 ml/min
5/5/2021 9:49 AM	20:00	5.89 pH	11.58 °C	368.41 µS/cm	1.10 mg/L	<5 -0.00 NTU	151.0 mV	26.20 ft	94.00 ml/min
5/5/2021 9:54 AM	25:00	5.90 pH	11.54 °C	377.53 µS/cm	1.10 mg/L	N/A -0.00 NTU	169.2 mV	26.20 ft	94.00 ml/min
5/5/2021 9:59 AM	30:00	5.89 pH	11.53 °C	379.14 µS/cm	1.04 mg/L	<5 -0.00 NTU	177.5 mV	26.20 ft	94.00 ml/min
5/5/2021 10:04 AM	35:00	5.90 pH	11.52 °C	380.08 µS/cm	0.90 mg/L	<5 -0.00 NTU	165.4 mV	26.20 ft	94.00 ml/min
5/5/2021 10:09 AM	40:00	5.89 pH	11.50 °C	382.41 µS/cm	0.89 mg/L	<5 -0.00 NTU	162.4 mV	26.20 ft	94.00 ml/min
5/5/2021 10:14 AM	45:00	5.92 pH	11.47 °C	386.57 µS/cm	0.86 mg/L	<5 -0.00 NTU	153.4 mV	26.20 ft	94.00 ml/min
5/5/2021 10:19 AM	50:00	5.91 pH	11.48 °C	387.85 µS/cm	0.86 mg/L	<5 -0.00 NTU	146.8 mV	26.20 ft	94.00 ml/min
5/5/2021 10:24 AM	55:00	5.91 pH	11.50 °C	386.80 µS/cm	0.92 mg/L	<5 -0.00 NTU	146.5 mV	26.20 ft	94.00 ml/min

MEM 5/1/21

Samples

Sample ID:	Description:
NHP_MW-109S	Sample Time: 1030 - 1050 Parameters: PFAS
NHP_MW-109S DUP	Sample Time: 1030 - 1050 Parameters: PFAS

Low-Flow Test Report:

Test Date / Time: 5/4/2021 1:01:14 PM

Project: NHP_MW-109D NHPC Superfund Site (2)

Operator Name: Beth Fulton

Location Name: NHP_MW-109D Well Diameter: 2 in Casing Type: PVC Screen Length: 20 ft Top of Screen: 58.6 ft Total Depth: 78.6 ft Initial Depth to Water: 25.82 ft	Pump Type: Bladder Tubing Type: Polyethylene Tubing Inner Diameter: 0.17 in Tubing Length: 71 ft Pump Intake From TOC: 68.6 ft Flow Cell Volume: 130 ml Final Flow Rate: 60 ml/min Final Draw Down: 0.15 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695992
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Test Notes:

PRIOR TO SAMPLING:

~~Pump serial number: 190063~~ Dedicated QED T-1200 Bladder Pump and MP-10 Controller
(MP-10 3584) TPJ
Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): HACH 2100Q 4448
SOLINST WL 039547
5/5/21

PVR (including calculations): $((68.6 \text{ ft} + 2.5 \text{ ft}) \times 9.7 \text{ ml/ft}) + 100\text{mL} = 789\text{mL}$
MeM 5/7/21

Maximum allowable drawdown rate: 0.02 ft/5min

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 1256

Parameters reached stabilization? No

If no, list parameters: Water Level, Turbidity, pH, DO, ORP,

Total volume purged prior to sampling: 1L

Minimum PVR reached (compare purge amount to PVR)? Yes, 1,000mL > 789 mL

2 Hour time limit reached? No

420
MeM 5/7/21

Modified sampling required? (Clock time when modified sampling begins): Yes, at time of pump start

Condition that triggered Modified Sampling: Per TPJ due to damages well and high Turbidity readings.

Final pressure of bladder pump: 42 PSI

Final refill rate: 55 Seconds

Final discharge rate: 5 seconds

Any adjustments made (including flow rates, tubing, etc.): none

Notes (i.e. bubbles in tubing): none

Final water level: 25.97 ft

Total actual volume purged (Don't enter estimated purge volume): 2L

Measured Well Depth, if required: N/A

Pump Off: 1340

Weather Conditions:

Cloudy, 40s

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/4/2021 1:01 PM	00:00	6.88 pH	14.42 °C	251.30 µS/cm	3.34 mg/L	413 1,134.4 NTU	129.0 mV	26.04 ft	60.00 ml/min
5/4/2021 1:06 PM	05:00	7.20 pH	13.67 °C	309.77 µS/cm	1.02 mg/L	422 527.86 NTU	21.1 mV	26.01 ft	60.00 ml/min
5/4/2021 1:11 PM	10:00	7.32 pH	13.67 °C	313.38 µS/cm	0.69 mg/L	358 449.84 NTU	-40.5 mV	25.97 ft	60.00 ml/min
5/4/2021 1:16 PM	15:00	7.37 pH	14.07 °C	310.17 µS/cm	0.56 mg/L	309 424.23 NTU	-60.9 mV	25.97 ft	60.00 ml/min

Mem 5/7/21

Samples

Sample ID:	Description:
NHP_MW- 109D	Sample Time: 1320 - 1329 Parameters: PFAS

Low-Flow Test Report:

Test Date / Time: 5/5/2021 9:33:36 AM

Project: NHP_MW-109R NHPC Superfund Site (2)

Operator Name: Beth Fulton

Location Name: NHP_MW-109R Well Diameter: ¹⁰ / ₂ in MeMsh _{1/2} Casing Type: Steel Casing Screen Length: 163 ft Top of Screen: 100.6 ft Total Depth: 263.6 ft Initial Depth to Water: ^{24.68} / ₂ ft MeM s _{1/2}	Pump Type: Bladder Tubing Type: Polyethylene Tubing Inner Diameter: 0.17 in Tubing Length: 163 ft Pump Intake From TOC: 161 ft Flow Cell Volume: 130 ml Final Flow Rate: 50 ml/min Final Draw Down: 0.2 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695992
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Test Notes:

PRIOR TO SAMPLING:

Pump Serial Number: MP10-3584, QED 1250

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): HACH 2100Q 4448
SOLINST WL 039547

PVR (including calculations): ((161 ft + 2 ft) x 4.5 ml/ft) + 100ml = 833mL

Maximum allowable drawdown rate: 0.00 ft/5min

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 0925

Parameters reached stabilization? Yes

If no, list parameters: NA

Total volume purged prior to sampling: 2.8L

Minimum PVR reached (compare purge amount to PVR)? Yes, 2,800mL > 833mL

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: NA

Final pressure of bladder pump: 79 PSI

Final refill rate: 51 seconds

Final discharge rate: 9 seconds

Any adjustments made (including flow rates, tubing, etc.): None

Notes (i.e. bubbles in tubing): Initial WL was 24.68 ft not 26.68 ft

Final water level: 24.88 ft

Total actual volume purged (Don't enter estimated purge volume): 3L

Measured Well Depth, if required: NA

Pump Off: 1051

DRAFT

Weather Conditions:

Cloudy/ Rain/m 40s

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/5/2021 9:33 AM	00:00	9.12 pH	11.12 °C	500.16 µS/cm	4.27 mg/L	<5 -0.00 NTU	128.1 mV	24.70 ft	52.00 ml/min
5/5/2021 9:38 AM	05:00	9.06 pH	11.24 °C	481.57 µS/cm	0.92 mg/L	<5 -0.00 NTU	126.4 mV	24.72 ft	52.00 ml/min
5/5/2021 9:43 AM	10:00	8.65 pH	11.12 °C	491.97 µS/cm	0.49 mg/L	<5 -0.00 NTU	-2.5 mV	24.72 ft	50.00 ml/min
5/5/2021 9:48 AM	15:00	8.42 pH	11.04 °C	497.03 µS/cm	0.34 mg/L	<5 -0.00 NTU	-99.7 mV	24.74 ft	50.00 ml/min
5/5/2021 9:53 AM	20:00	8.34 pH	10.97 °C	497.87 µS/cm	0.31 mg/L	<5 -6.07 NTU	-124.8 mV	24.76 ft	50.00 ml/min
5/5/2021 9:58 AM	25:00	8.31 pH	10.87 °C	497.93 µS/cm	0.25 mg/L	<5 -42.02 NTU	-137.1 mV	24.77 ft	50.00 ml/min
5/5/2021 10:03 AM	30:00	8.30 pH	10.88 °C	490.48 µS/cm	0.22 mg/L	<5 -66.03 NTU	-142.8 mV	24.79 ft	50.00 ml/min
5/5/2021 10:08 AM	35:00	8.27 pH	10.92 °C	488.59 µS/cm	0.19 mg/L	<5 -126.69 NTU	-144.9 mV	24.80 ft	50.00 ml/min
5/5/2021 10:13 AM	40:00	8.34 pH	10.94 °C	500.10 µS/cm	0.18 mg/L	<5 -272.68 NTU	-151.2 mV	24.82 ft	50.00 ml/min
5/5/2021 10:18 AM	45:00	8.34 pH	10.93 °C	487.52 µS/cm	0.18 mg/L	<5 -287.30 NTU	-152.7 mV	24.84 ft	50.00 ml/min
5/5/2021 10:23 AM	50:00	8.34 pH	10.97 °C	479.46 µS/cm	0.18 mg/L	<5 -371.14 NTU	-150.8 mV	24.84 ft	50.00 ml/min
5/5/2021 10:28 AM	55:00	8.32 pH	10.67 °C	491.61 µS/cm	0.22 mg/L	<5 -425.48 NTU	-151.3 mV	24.84 ft	50.00 ml/min

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Samples

Sample ID:	Description:
NHP_MW-109R	Sample Time: 1034-1048 Parameters: PFAS

Low-Flow Test Report:

Test Date / Time: 5/3/2021 11:36:15 AM

Project: NHP_MW-304S NHPC Superfund Site (2)

Operator Name: E. Dymess

Location Name: NHP_MW-304S Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 14.8 ft Total Depth: 24.8 ft Initial Depth to Water: 12.55 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 22.8 ft Pump Intake From TOC: 19.8 ft Flow Cell Volume: 130 ml Final Flow Rate: 120 ml/min Final Draw Down: 0.02 ft	Instrument Used: Aqua TROLL 600 Serial Number: 685779
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: 19541

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100 Q 3345

PVR (including calculations): $(19.8 \text{ ft} + 3 \text{ ft}) \times 9.7 \text{ ml/ft} = 222 \text{ ml}$

Maximum allowable drawdown rate: 0.02 ft / 5 min

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 1135

Parameters reached stabilization? Yes

If no, list parameters: n/a

Total volume purged prior to sampling: 3L

Minimum PVR reached (compare purge amount to PVR)? Yes, 3L > 222 ml

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): no

Condition that triggered Modified Sampling: n/a

Any adjustments made (including flow rates, tubing, etc.): no

Notes (i.e. bubbles in tubing): bubbles built up in tubing, removed as necessary

Final water level: 12.57 ft
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Total actual volume purged: 3.5 L

Measured Well Depth, if required: n/a

Pump Off: 1215

Weather Conditions:
Sunny, 60s, slight breeze

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 5	
5/3/2021 11:36 AM	00:00	6.44 pH	12.76 °C	451.18 µS/cm	2.19 mg/L	N/A -0.00 NTU	171.3 mV	12.55 ft	110.00 ml/min
5/3/2021 11:41 AM	05:00	6.52 pH	10.65 °C	442.17 µS/cm	1.07 mg/L	<5 -0.00 NTU	155.6 mV	12.57 ft	115.00 ml/min
5/3/2021 11:46 AM	10:00	6.54 pH	10.39 °C	444.56 µS/cm	0.62 mg/L	<5 -0.00 NTU	161.7 mV	12.57 ft	120.00 ml/min
5/3/2021 11:51 AM	15:00	6.53 pH	10.32 °C	444.39 µS/cm	0.44 mg/L	<5 -0.00 NTU	151.4 mV	12.57 ft	120.00 ml/min
5/3/2021 11:56 AM	20:00	6.54 pH	10.09 °C	444.96 µS/cm	0.37 mg/L	<5 -0.00 NTU	146.9 mV	12.57 ft	120.00 ml/min
5/3/2021 12:01 PM	25:00	6.52 pH	10.33 °C	448.05 µS/cm	0.34 mg/L	<5 -0.00 NTU	144.5 mV	12.57 ft	120.00 ml/min

Mem 5/7/21

Samples

Sample ID:	Description:
NHP_MW-304S	1210-1215 PFAS
FIELD BLANK-DYRNESS	1205-1210 PFAS

Low-Flow Test Report:

Test Date / Time: 5/3/2021 10:40:57 AM

Project: NHP_MW-305S NHPC Superfund Site (2)

Operator Name: Beth Fulton

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Location Name: NHP_MW-305S Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 16.8 ft Total Depth: 26.8 ft Initial Depth to Water: 12.39 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 23.8 ft Pump Intake From TOC: 21.8 ft Flow Cell Volume: 130 ml Final Flow Rate: 100 ml/min Final Draw Down: 0.03 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695992
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: 19063

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): HACH 2100Q 4448
SOLINST WL 039547

PVR (including calculations): $(21.8 \text{ ft} + 2 \text{ ft}) \times 9.7 \text{ ml/ft} = 231 \text{ mL}$

Maximum allowable drawdown rate: 0.02 ft/5min

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 1035

Parameters reached stabilization? Yes

If no, list parameters: N/A

Total volume purged prior to sampling: 4L

Minimum PVR reached (compare purge amount to PVR)? Yes, 4,000mL > 231mL

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: N/A

Any adjustments made (including flow rates, tubing, etc.): None

Notes (i.e. bubbles in tubing): None ; high RDO is consistent with previous sampling round.

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Final water level: 12.42 ft

Total actual volume purged (Don't enter estimated purge volume): 5L

Measured Well Depth, if required: N/A

Pump Off: 1137

Weather Conditions:
Sunny, 50s-60s

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/3/2021 10:40 AM	00:00	5.81 pH	12.17 °C	263.28 µS/cm	8.81 mg/L	≤5 -0.00 NTU	162.0 mV	12.39 ft	102.00 ml/min
5/3/2021 10:45 AM	05:00	5.62 pH	10.86 °C	235.80 µS/cm	9.15 mg/L	≤5 -0.00 NTU	180.6 mV	12.40 ft	102.00 ml/min
5/3/2021 10:50 AM	10:00	5.61 pH	10.64 °C	247.40 µS/cm	9.22 mg/L	≤5 -0.00 NTU	189.2 mV	12.40 ft	104.00 ml/min
5/3/2021 10:55 AM	15:00	5.61 pH	10.53 °C	251.79 µS/cm	9.24 mg/L	≤5 -0.00 NTU	195.1 mV	12.40 ft	100.00 ml/min
5/3/2021 11:00 AM	20:00	5.63 pH	10.71 °C	243.23 µS/cm	9.20 mg/L	≤5 -0.00 NTU	199.7 mV	12.40 ft	100.00 ml/min
5/3/2021 11:05 AM	25:00	5.64 pH	10.47 °C	243.60 µS/cm	9.23 mg/L	≤5 -0.00 NTU	204.1 mV	12.40 ft	100.00 ml/min
5/3/2021 11:10 AM	30:00	5.62 pH	10.52 °C	259.30 µS/cm	9.21 mg/L	≤5 -0.00 NTU	209.5 mV	12.41 ft	100.00 ml/min
5/3/2021 11:15 AM	35:00	5.63 pH	10.64 °C	254.71 µS/cm	9.19 mg/L	≤5 -2.04 NTU	213.9 mV	12.41 ft	100.00 ml/min
5/3/2021 11:20 AM	40:00	5.64 pH	10.50 °C	258.92 µS/cm	9.17 mg/L	≤5 -7.84 NTU	217.5 mV	12.42 ft	100.00 ml/min

Mem 5/7/21

Samples

Sample ID:	Description:
NHP_MW-305S	Sample Start Time: 1130 Sample End Time: 1137 Parameters: PFAS Field Blank collected
FIELD BLANK-FULTON	Sample Time: 1125 Parameters: PFAS

Low-Flow Test Report:

Test Date / Time: 5/3/2021 12:13:19 PM

Project: NHP_MW-305D NHPC Superfund Site (2)

Operator Name: Beth Fulton

Location Name: NHP_MW-305D Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 45.7 ft Total Depth: 55.7 ft Initial Depth to Water: 12.63 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 52.7 ft Pump Intake From TOC: 50.7 ft Flow Cell Volume: 130 ml Final Flow Rate: 108 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695992
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: 19063

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): HACH 2100Q 4448
SOLINST WL 039547

PVR (including calculations): $(50.7 \text{ ft} + 2 \text{ ft}) \times 9.7 \text{ ml/ft} = 511.19 \text{ mL}$

Maximum allowable drawdown rate: 0.02 ft/5min

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 1208

Parameters reached stabilization? Yes

If no, list parameters: N/A

Total volume purged prior to sampling: 2L

Minimum PVR reached (compare purge amount to PVR)? Yes, 2,000mL > 511.19mL

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: N/A

Any adjustments made (including flow rates, tubing, etc.): None

Notes (i.e. bubbles in tubing): High RDO levels consistent with the previous sample round.

Final water level: 12.65 ft

Total actual volume purged (Don't enter estimated purge volume): 2.5L

Measured Well Depth, if required: N/A

Pump Off: 1241

Weather Conditions:
Partly cloudy, 50s-60s

DRAFT

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/3/2021 12:13 PM	00:00	5.94 pH	12.24 °C	855.69 µS/cm	9.46 mg/L	<5 -0.00 NTU	221.4 mV	12.66 ft	102.00 ml/min
5/3/2021 12:18 PM	05:00	5.93 pH	11.86 °C	805.56 µS/cm	9.52 mg/L	<5 -0.00 NTU	223.3 mV	12.65 ft	104.00 ml/min
5/3/2021 12:23 PM	10:00	5.94 pH	11.74 °C	793.15 µS/cm	9.56 mg/L	<5 -0.00 NTU	225.4 mV	12.64 ft	108.00 ml/min
5/3/2021 12:28 PM	15:00	5.94 pH	11.68 °C	789.04 µS/cm	9.53 mg/L	<5 -0.00 NTU	228.0 mV	12.64 ft	108.00 ml/min

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Samples

Sample ID:	Description:
NHP_MW-305D	Sample Start Time: 1235 Sample End Time: 1241 Parameters: PFAS NO QA/QC samples collected

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 5/5/2021 8:48:11 AM

Project: NHP_MW-307S NHPC Superfund Site (2)

Operator Name: E. Dymess

Location Name: NHP_MW-307S Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 17.7 ft Total Depth: 27.7 ft Initial Depth to Water: 17.13 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 27.7 ft Pump Intake From TOC: 23.7 ft Flow Cell Volume: 130 ml Final Flow Rate: 110 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Serial Number: 685779
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: 19541

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100 Q 3345

PVR (including calculations): $(23.7 \text{ ft} + 4 \text{ ft}) \times 9.7 \text{ ml/ft} = 269 \text{ ml}$

Maximum allowable drawdown rate: 0.02 ft / 5 min

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 0845

Parameters reached stabilization? Yes

If no, list parameters: n/a

Total volume purged prior to sampling: 2.5 L

Minimum PVR reached (compare purge amount to PVR)? Yes, 2.5L > 269 ml

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): no

Condition that triggered Modified Sampling: n/a

Any adjustments made (including flow rates, tubing, etc.): no

Notes (i.e. bubbles in tubing): bubbles in tubing, removed as necessary

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Final water level: 17.14 ft

Total actual volume purged: 3L

Measured Well Depth, if required: n/a

Pump Off: 0925

Weather Conditions:

Overcast, light rain, slight breeze, 40s

DRAFT**Low-Flow Readings:**

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 5	
5/5/2021 8:48 AM	00:00	6.13 pH	11.06 °C	631.65 µS/cm	4.36 mg/L	N/A -0.00 NTU	173.6 mV	17.13 ft	100.00 ml/min
5/5/2021 8:53 AM	05:00	5.97 pH	9.78 °C	652.97 µS/cm	2.36 mg/L	<5 -0.00 NTU	150.3 mV	17.14 ft	110.00 ml/min
5/5/2021 8:58 AM	10:00	5.98 pH	9.64 °C	659.76 µS/cm	2.06 mg/L	<5 -0.00 NTU	148.8 mV	17.14 ft	110.00 ml/min
5/5/2021 9:03 AM	15:00	5.98 pH	9.56 °C	652.96 µS/cm	2.15 mg/L	<5 -0.00 NTU	148.6 mV	17.14 ft	110.00 ml/min
5/5/2021 9:08 AM	20:00	5.99 pH	9.49 °C	647.17 µS/cm	2.14 mg/L	<5 -0.00 NTU	154.8 mV	17.14 ft	110.00 ml/min

Mem 5/7/21

Samples

Sample ID:	Description:
NHP_MW-307S	0915-0925 PFAS
NHP_MW-307S DUP	0915-0925 PFAS
EQUIP BLANK	1015 PFAS

Low-Flow Test Report:

Test Date / Time: 5/4/2021 10:55:14 AM

Project: NHP_MW-310D NHPC Superfund Site (2)

Operator Name: M. Murphy

Location Name: NHP_MW-310D Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 58.8 ft Total Depth: 68.8 ft Initial Depth to Water: 18.43 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 65.8 ft Pump Intake From TOC: 63.8 ft Flow Cell Volume: 130 ml Final Flow Rate: 106 ml/min Final Draw Down: 0.04 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695538
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: Geopump 046357

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100Q Model 3387

Water Level: 035954

PVR (including calculations): $(63.8 \text{ ft} + 2 \text{ ft}) \times 9.7 \text{ mL/ft} = 638.3 \text{ mL}$

Maximum allowable drawdown rate: 0.02ft per 5mins

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 1045

Parameters reached stabilization? Yes

If no, list parameters: NA

Total volume purged prior to sampling: 2.0L

Minimum PVR reached (compare purge amount to PVR)? Yes, 2.0L > 638.3 mL

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: NA

Any adjustments made (including flow rates, tubing, etc.): No

Notes (i.e. bubbles in tubing): Significant air bubbles observed in tubing, purged prior to sample collection. DO reading stabilized at a slightly higher concentration as compared to the previous event during 2018.

Final water level: 18.50 ft

Total actual volume purged (Don't enter estimated purge volume): 2.75 L

Measured Well Depth, if required: NA

Pump Off: 1125

Weather Conditions:

Partially cloudy, chance of rain, 50s

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/4/2021 10:55 AM	00:00	6.36 pH	10.31 °C	558.16 µS/cm	7.67 mg/L	N/A -0.00 NTU	148.9 mV	18.43 ft	
5/4/2021 11:00 AM	05:00	6.23 pH	10.34 °C	583.64 µS/cm	7.93 mg/L	<5 -0.00 NTU	156.5 mV	18.44 ft	110.00 ml/min
5/4/2021 11:05 AM	10:00	6.20 pH	10.35 °C	594.32 µS/cm	8.18 mg/L	<5 -0.00 NTU	159.1 mV	18.46 ft	106.00 ml/min
5/4/2021 11:10 AM	15:00	6.20 pH	10.40 °C	588.19 µS/cm	8.26 mg/L	<5 -0.00 NTU	159.0 mV	18.47 ft	106.00 ml/min

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Samples

Sample ID:	Description:
NHP_MW-310D	Sample Time: 1115 - 1125 Parameters: PFAS

Low-Flow Test Report:

Test Date / Time: 5/3/2021 10:42:59 AM

Project: NHP_MW-312S NHPC Superfund Site (2)

Operator Name: M. Murphy

Location Name: NHP_MW-312S Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 11.6 ft Total Depth: 21.6 ft Initial Depth to Water: 13.71 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 21.1 ft Pump Intake From TOC: 18.1 ft Flow Cell Volume: 130 ml Final Flow Rate: 120 ml/min Final Draw Down: 0.04 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695538
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: Geopump 046357

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100Q Model 3387

Water Level: 035954

PVR (including calculations): $(18.1 \text{ ft} + 3 \text{ ft}) \times 9.7 \text{ mL/ft} = 204.7 \text{ mL}$

Maximum allowable drawdown rate: 0.02ft per 5mins

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 1040

Parameters reached stabilization? Yes

If no, list parameters: NA

Total volume purged prior to sampling: 3.75L

Minimum PVR reached (compare purge amount to PVR)? Yes, 3.75L > 204.7 mL

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: NA

Any adjustments made (including flow rates, tubing, etc.): No

Notes (i.e. bubbles in tubing): Bubbles observed in tubing, purged prior to sample collection, high RDO is consistent with previous sampling date.

Final water level: 13.75 ft

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Total actual volume purged (Don't enter estimated purge volume): 5.0 L

Measured Well Depth, if required: NA

Pump Off: 1125

DRAFT

Weather Conditions:
Partially cloudy, 60s

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/3/2021 10:42 AM	00:00	6.17 pH	15.28 °C	119.38 µS/cm	5.93 mg/L	N/A -0.00 NTU	110.2 mV	13.71 ft	116.00 ml/min
5/3/2021 10:47 AM	05:00	5.97 pH	10.09 °C	104.48 µS/cm	5.76 mg/L	<5 -0.00 NTU	139.7 mV	13.75 ft	116.00 ml/min
5/3/2021 10:52 AM	10:00	5.86 pH	9.78 °C	109.88 µS/cm	4.81 mg/L	<5 -0.00 NTU	157.0 mV	13.75 ft	118.00 ml/min
5/3/2021 10:57 AM	15:00	5.79 pH	9.57 °C	109.82 µS/cm	4.39 mg/L	<5 -0.00 NTU	156.5 mV	13.75 ft	118.00 ml/min
5/3/2021 11:02 AM	20:00	5.76 pH	9.61 °C	109.58 µS/cm	3.93 mg/L	<5 -0.00 NTU	165.6 mV	13.75 ft	120.00 ml/min
5/3/2021 11:07 AM	25:00	5.73 pH	9.54 °C	111.15 µS/cm	3.85 mg/L	<5 -0.00 NTU	168.0 mV	13.75 ft	120.00 ml/min
5/3/2021 11:12 AM	30:00	5.72 pH	9.48 °C	108.21 µS/cm	3.65 mg/L	<5 -0.00 NTU	168.6 mV	13.75 ft	120.00 ml/min

MeM 5/7/21

Samples

Sample ID:	Description:
FIELD BLANK-MURPHY	Sample Time: 1115 - 1115 Parameters: PFAS
NHP_MW-312S	Sample Time: 1120 - 1125 Parameters: PFAS

Low-Flow Test Report:

Test Date / Time: 5/3/2021 12:05:13 PM

Project: NHP_MW-312D NHPC Superfund Site (2)

Operator Name: M. Murphy

Location Name: NHP_MW-312D Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 39.5 ft Total Depth: 49.5 ft Initial Depth to Water: 14.44 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 46.5 ft Pump Intake From TOC: 44.5 ft Flow Cell Volume: 130 ml Final Flow Rate: 120 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695538
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Test Notes:

PRIOR TO SAMPLING:

Pump serial number: Geopump 046357

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100Q Model 3387

Water Level: 035954

PVR (including calculations): $(44.5 \text{ ft} + 2 \text{ ft}) \times 9.7 \text{ mL/ft} = 451.1 \text{ mL}$

Maximum allowable drawdown rate: 0.02ft per 5mins

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 1200

Parameters reached stabilization? Yes

If no, list parameters: NA

Total volume purged prior to sampling: 5.0 L

Minimum PVR reached (compare purge amount to PVR)? Yes, 5.0 L > 451.1 mL

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: NA

Any adjustments made (including flow rates, tubing, etc.): No

Notes (i.e. bubbles in tubing): Bubbles observed in tubing, purged prior to sample collection

Final water level: 14.45 ft

Total actual volume purged (Don't enter estimated purge volume): 5.25 L

Measured Well Depth, if required: NA

Pump Off: 1250

Weather Conditions:
Partially cloudy, 60s

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/3/2021 12:05 PM	00:00	5.83 pH	17.55 °C	196.74 µS/cm	1.96 mg/L	N/A -0.00 NTU	128.7 mV	14.44 ft	120.00 ml/min
5/3/2021 12:10 PM	05:00	5.79 pH	11.92 °C	128.99 µS/cm	0.57 mg/L	<5 -0.00 NTU	124.1 mV	14.45 ft	120.00 ml/min
5/3/2021 12:15 PM	10:00	5.62 pH	11.80 °C	122.42 µS/cm	0.37 mg/L	<5 -0.00 NTU	143.2 mV	14.45 ft	120.00 ml/min
5/3/2021 12:20 PM	15:00	5.50 pH	11.68 °C	123.97 µS/cm	0.34 mg/L	<5 -0.00 NTU	156.2 mV	14.46 ft	120.00 ml/min
5/3/2021 12:25 PM	20:00	5.46 pH	11.58 °C	126.04 µS/cm	0.30 mg/L	<5 -0.00 NTU	165.3 mV	14.45 ft	120.00 ml/min
5/3/2021 12:30 PM	25:00	5.42 pH	11.69 °C	128.56 µS/cm	0.30 mg/L	<5 -0.00 NTU	170.5 mV	14.45 ft	120.00 ml/min
5/3/2021 12:35 PM	30:00	5.42 pH	11.60 °C	129.80 µS/cm	0.27 mg/L	<5 -0.00 NTU	175.8 mV	14.45 ft	120.00 ml/min
5/3/2021 12:40 PM	35:00	5.43 pH	11.57 °C	132.22 µS/cm	0.28 mg/L	<5 -0.00 NTU	176.5 mV	14.45 ft	120.00 ml/min

MEM 5/7/21

Samples

Sample ID:	Description:
NHP_MW-312D	Sample Time: 1245 - 1250 Parameters: PFAS

Low-Flow Test Report:

Test Date / Time: 5/4/2021 8:45:04 AM

Project: NHP_MW-402D NHPC Superfund Site (2)

Operator Name: M. Murphy

Location Name: NHP_MW-402D Well Diameter: 2 in Casing Type: PVC Screen Length: 10 ft Top of Screen: 37.7 ft Total Depth: 47.7 ft Initial Depth to Water: 14.55 ft	Pump Type: Peristaltic Tubing Type: Polyethylene Tubing Inner Diameter: 0.25 in Tubing Length: 45.7 ft Pump Intake From TOC: 42.7 ft Flow Cell Volume: 130 ml Final Flow Rate: 98 ml/min Final Draw Down: 1.16 ft	Instrument Used: Aqua TROLL 600 Serial Number: 695538
---	--	--

Test Notes:

PRIOR TO SAMPLING:

Pump serial number: Geopump 046357

Turbidity meter model and serial number (or similar unique designation, i.e., last four digits): Hach 2100Q Model 3387

Water Level: 035954

PVR (including calculations): $(42.7 \text{ ft} + 3 \text{ ft}) \times 9.7 \text{ mL/ft} = 443.3 \text{ mL}$

Maximum allowable drawdown rate: 0.02ft per 5mins

Is #14 tubing used at this location? No

DURING/AFTER SAMPLING:

Pump start time: 0840

Parameters reached stabilization? Yes

If no, list parameters: NA

Total volume purged prior to sampling: 5.75L

Minimum PVR reached (compare purge amount to PVR)? Yes, $5.75 \text{ L} > 443.3 \text{ mL}$

2 Hour time limit reached? No

Modified sampling required? (Clock time when modified sampling begins): No

Condition that triggered Modified Sampling: NA

Any adjustments made (including flow rates, tubing, etc.): Pump speed decreased to change flow-rate from 104 mL/min to 98 mL/min.

Notes (i.e. bubbles in tubing): Large bubbles observed in tubing, purged prior to sample collection; high RDO is consistent with previous sampling rounds.

MeM 5/7/21

Final water level: 15.75 ft

Total actual volume purged (Don't enter estimated purge volume): 6.0 L

Measured Well Depth, if required: NA

Pump Off: 1000

Weather Conditions:

Cloudy, chance of rain, 50s

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 1	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	+/- 0.02	
5/4/2021 8:45 AM	00:00	9.22 pH	10.82 °C	202.39 µS/cm	5.94 mg/L	N/A -0.00 NTU	77.1 mV	14.55 ft	96.00 ml/min
5/4/2021 8:50 AM	05:00	10.19 pH	9.56 °C	194.89 µS/cm	4.84 mg/L	<5 -0.00 NTU	39.6 mV	15.48 ft	104.00 ml/min
5/4/2021 8:55 AM	10:00	10.47 pH	9.54 °C	202.08 µS/cm	4.66 mg/L	<5 -0.00 NTU	33.8 mV	15.51 ft	104.00 ml/min
5/4/2021 9:00 AM	15:00	10.27 pH	9.58 °C	196.15 µS/cm	4.31 mg/L	<5 -0.00 NTU	29.2 mV	15.53 ft	104.00 ml/min
5/4/2021 9:05 AM	20:00	10.16 pH	9.63 °C	194.69 µS/cm	3.97 mg/L	<5 -0.00 NTU	35.3 mV	15.57 ft	98.00 ml/min
5/4/2021 9:10 AM	25:00	10.05 pH	9.62 °C	195.43 µS/cm	3.63 mg/L	<5 -0.00 NTU	35.7 mV	15.58 ft	98.00 ml/min
5/4/2021 9:15 AM	30:00	9.85 pH	9.61 °C	197.44 µS/cm	3.17 mg/L	<5 -0.00 NTU	37.8 mV	15.60 ft	98.00 ml/min
5/4/2021 9:20 AM	35:00	9.76 pH	9.64 °C	197.82 µS/cm	2.84 mg/L	<5 -0.00 NTU	37.4 mV	15.63 ft	98.00 ml/min
5/4/2021 9:25 AM	40:00	9.63 pH	9.69 °C	199.31 µS/cm	2.46 mg/L	<5 -0.00 NTU	43.3 mV	15.66 ft	98.00 ml/min
5/4/2021 9:30 AM	45:00	9.62 pH	9.69 °C	200.21 µS/cm	2.32 mg/L	<5 -0.00 NTU	43.2 mV	15.68 ft	98.00 ml/min
5/4/2021 9:35 AM	50:00	9.63 pH	9.69 °C	200.12 µS/cm	2.20 mg/L	<5 -0.00 NTU	40.8 mV	15.69 ft	98.00 ml/min
5/4/2021 9:40 AM	55:00	9.62 pH	9.72 °C	200.47 µS/cm	2.12 mg/L	<5 -0.00 NTU	41.0 mV	15.71 ft	98.00 ml/min

MEM 5/7/21

Samples

Sample ID:	Description:
NHP_MW-402D	Sample Time: 0950 - 1000 Parameters: PFAS



DRAFT

Vendor Equipment Certifications

Calibration Report

Instrument Aqua TROLL 600
 Serial Number 695992
 Created 4/7/2021

Sensor RDO
 Serial Number 652241
 Last Calibrated 4/7/2021

NIST Thermometer: 19.12
 Serial NO: D1611047Z
 Annual Cal: 27-Jul-2020
 TROLL Temp: 19.17

TPJ 4/12/21

Calibration Details

Slope 1.0564
 Offset 0.00 mg/L

Calibration point 100%

Concentration 8.37 mg/L
 Pre Measurement 100.29 %Sat
 Post Measurement 100.00 %Sat
 Temperature 21.50 °C
 Barometric Pressure 1,014.7 mbar

Sensor Conductivity

Serial Number 675036
 Last Calibrated 4/7/2021

Calibration Details

TDS Conversion Factor (ppm) 0.65
 Cell Constant 0.951
 Reference Temperature 25.00 °C

Pre Measurement

Actual Conductivity 1,303.8 µS/cm
 Specific Conductivity 1,399.3 µS/cm

Post Measurement

Actual Conductivity 1,316.5 µS/cm
 Specific Conductivity 1,413.0 µS/cm

Sensor	pH/ORP
Serial Number	723210
Last Calibrated	4/7/2021

Calibration Details

Calibration Point 1

pH of Buffer	4.00 pH
pH mV	165.4 mV
Temperature	21.24 °C

Pre Measurement

pH	4.05 pH
pH mV	165.1 mV

Post Measurement

pH	4.00 pH
pH mV	163.3 mV

Calibration Point 2

pH of Buffer	7.02 pH
pH mV	-5.4 mV
Temperature	21.34 °C

Pre Measurement

pH	7.13 pH
pH mV	-5.4 mV

Post Measurement

pH	7.02 pH
pH mV	-5.3 mV

Calibration Point 3

pH of Buffer	10.04 pH
pH mV	-177.3 mV
Temperature	21.56 °C

Pre Measurement

pH	10.23 pH
pH mV	-177.4 mV

Post Measurement

pH	10.04 pH
pH mV	-175.3 mV

Slope and Offset 1

Slope	-56.53 mV/pH
Offset	-4.2 mV

Slope and Offset 2

Slope	-56.94 mV/pH
Offset	-4.2 mV

ORP

ORP Solution	ZoBell's
Offset	12.2 mV
Temperature	21.49 °C
Pre Measurement	221.5 mV
Post Measurement	233.7 mV

Sensor	Turbidity
Serial Number	683493
Last Calibrated	Factory Defaults

Sensor	Barometric Pressure
Serial Number	695992
Last Calibrated	Factory Defaults

UNIT 1



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

29 Washington Avenue, Unit A
Scarborough, ME 04074
Toll-free: (888) 779-PINE (7463)

Pine Environmental Services, Inc.

Instrument ID 29537

Description HACH 2100Q Turbidimeter

Calibrated 4/8/2021 9:31:36AM

Manufacturer	HACH	State Certified
Model Number	2100Q	Status Pass
Serial Number/ Lot Number	14080C034448	Temp °C 21
Location	Maine	Humidity % 36
Department		

Calibration Specifications

Group # 1

Group Name Turbidity

Stated Accy Pct of Reading

Range Acc % 0.0000

Reading Acc % 3.0000

Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
10.00 / 10.00	NTU	10.00	NTU	10.10	9.92	-0.80%	Pass
20.00 / 20.00	NTU	20.00	NTU	20.10	19.90	-0.50%	Pass
100.00 / 100.00	NTU	100.00	NTU	98.00	99.60	-0.40%	Pass
800.00 / 800.00	NTU	800.00	NTU	807.00	801.00	0.13%	Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Next Cal Date / Last Cal Date/ Expiration Date Opened Date
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Notes about this calibration

Calibration Result Calibration Successful

Who Calibrated Steve Demers

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

Calibration Report

Instrument Aqua TROLL 600
 Serial Number 695538
 Created 4/7/2021

Sensor RDO
 Serial Number 636249
 Last Calibrated 4/7/2021

NIST Reference Thermometer

Serial No: D16110472
 Reading: 20.00 °C

Aqua Troll Serial No: 695538
 Reading 20.01 °C

TPJ 4/12/21

Calibration Details

Slope 0.9598935
 Offset 0.00 mg/L

Calibration point 100%

Concentration 9.19 mg/L
 Pre Measurement 101.41 %Sat
 Post Measurement 100.00 %Sat
 Temperature 21.60 °C
 Barometric Pressure 1,014.8 mbar

Sensor Conductivity

Serial Number 675385
 Last Calibrated 4/7/2021

Calibration Details

TDS Conversion Factor (ppm) 0.65
 Cell Constant 0.973
 Reference Temperature 25.00 °C

Pre Measurement

Actual Conductivity 1,285.8 µS/cm
 Specific Conductivity 1,380.7 µS/cm

Post Measurement

Actual Conductivity 1,315.8 µS/cm
 Specific Conductivity 1,413.0 µS/cm

Sensor	pH/ORP
Serial Number	758746
Last Calibrated	4/7/2021

Calibration Details

Calibration Point 1

pH of Buffer	4.00 pH
pH mV	165.7 mV
Temperature	21.49 °C

Pre Measurement

pH	4.11 pH
pH mV	164.8 mV

Post Measurement

pH	4.00 pH
pH mV	163.7 mV

Calibration Point 2

pH of Buffer	7.02 pH
pH mV	-5.0 mV
Temperature	21.30 °C

Pre Measurement

pH	7.18 pH
pH mV	-4.8 mV

Post Measurement

pH	7.02 pH
pH mV	-4.9 mV

Calibration Point 3

pH of Buffer	10.04 pH
pH mV	-176.0 mV
Temperature	21.46 °C

Pre Measurement

pH	10.28 pH
pH mV	-176.4 mV

Post Measurement

pH	10.04 pH
pH mV	-173.9 mV

Slope and Offset 1

Slope	-56.51 mV/pH
Offset	-3.9 mV

Slope and Offset 2

Slope	-56.61 mV/pH
Offset	-3.9 mV

ORP

ORP Solution	ORP Standard
Offset	21.8 mV
Temperature	21.50 °C
Pre Measurement	233.2 mV
Post Measurement	240.0 mV

Sensor	Turbidity
Serial Number	751661
Last Calibrated	Factory Defaults
Sensor	Barometric Pressure
Serial Number	695538
Last Calibrated	Factory Defaults

UNIT 2



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

29 Washington Avenue, Unit A
Scarborough, ME 04074
Toll-free: (888) 779-PINE (7463)

Pine Environmental Services, Inc.

Instrument ID 45320

Description HACH 2100Q Turbidity meter

Calibrated 4/6/2021 2:33:30PM

Manufacturer	HACH	State Certified
Model Number	2100Q	Status Pass
Serial Number/ Lot	19010C073387	Temp °C 22
Number		Humidity % 31
Location	Maine	
Department		

Calibration Specifications

Group #	1	Range Acc %	0.0000
Group Name	Turbidity	Reading Acc %	3.0000
Stated Accy	Pct of Reading	Plus/Minus	0.00
Nom In Val / In Val	In Type	Out Val	Out Type
10.00 / 10.00	NTU	10.00	NTU
20.00 / 20.00	NTU	20.00	NTU
100.00 / 100.00	NTU	100.00	NTU
800.00 / 800.00	NTU	800.00	NTU
		779.00	792.00
			-1.00% Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Next Cal Date / Last Cal Date/ Expiration Date Opened Date
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Notes about this calibration

Calibration Result Calibration Successful

Who Calibrated Nick Rocco

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

UNIT 3

Calibration Report

DRAFT

Instrument Aqua TROLL 600
 Serial Number 685779
 Created 4/8/2021

Sensor	RDO
Serial Number	684678
Last Calibrated	4/8/2021

Calibration Details

Slope	1.023914
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.60 mg/L
Pre Measurement	102.31 %Sat
Post Measurement	100.00 %Sat
Temperature	22.01 °C
Barometric Pressure	1,020.0 mbar

Sensor	Conductivity
Serial Number	694748
Last Calibrated	4/8/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.939
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	1,292.9 µS/cm
Specific Conductivity	1,411.1 µS/cm

Post Measurement

Actual Conductivity	1,294.7 µS/cm
Specific Conductivity	1,413.0 µS/cm

NIST Thermometer: 18.98 °C

Serial No.: D16110472

Annual Cal : 27 - Jul - 2020

Aqua TROLL temp: 19.10 °C

TAS ~~4/8~~ 4/12/21

Sensor	pH/ORP
Serial Number	778950
Last Calibrated	4/8/2021

Calibration Details

Calibration Point 1

pH of Buffer	4.00 pH
pH mV	164.5 mV
Temperature	20.39 °C

Pre Measurement

pH	4.14 pH
pH mV	163.3 mV

Post Measurement

pH	4.00 pH
pH mV	161.9 mV

Calibration Point 2

pH of Buffer	7.02 pH
pH mV	-4.1 mV
Temperature	20.07 °C

Pre Measurement

pH	7.13 pH
pH mV	-3.8 mV

Post Measurement

pH	7.02 pH
pH mV	-4.1 mV

Calibration Point 3

pH of Buffer	10.04 pH
pH mV	-175.1 mV
Temperature	20.52 °C

Pre Measurement

pH	10.20 pH
pH mV	-174.9 mV

Post Measurement

pH	10.04 pH
pH mV	-172.5 mV

Slope and Offset 1

Slope	-55.83 mV/pH
Offset	-3.0 mV

Slope and Offset 2

Slope	-56.61 mV/pH
Offset	-3.0 mV

ORP

UNIT 3

ORP Solution	ORP Standard
Offset	18.7 mV
Temperature	20.92 °C
Pre Measurement	221.3 mV
Post Measurement	240.0 mV

Sensor Turbidity

Serial Number	696683
Last Calibrated	Factory Defaults

Sensor Barometric Pressure

Serial Number	685779
Last Calibrated	Factory Defaults

UNIT 3



INSTRUMENT CALIBRATION REPORT

Pine Environmental Services LLC

29 Washington Avenue, Unit A
Scarborough, ME 04074
Toll-free: (888) 779-PINE (7463)

Pine Environmental Services, Inc.

Instrument ID 45454

Description HACH 2100Q Turbidity meter

Calibrated 4/8/2021 9:32:28AM

Manufacturer	HACH	State Certified	NJ Cert#: 11034
Model Number	2100Q	Status	Pass
Serial Number/ Lot Number	19010C073345	Temp °C	21
Location	Maine	Humidity %	36
Department			

Calibration Specifications

Group #	1	Range Acc %	0.0000
Group Name	Turbidity	Reading Acc %	10.0000
Stated Accy	Pct of Reading	Plus/Minus	0.00
Nom In Val / In Val	In Type	Out Val	Out Type
10.00 / 10.00	NTU	10.00	NTU
20.00 / 20.00	NTU	20.00	NTU
100.00 / 100.00	NTU	100.00	NTU
800.00 / 800.00	NTU	800.00	NTU
		9.33	9.65
		18.70	19.50
		99.10	102.00
		778.00	776.00
			-3.50%
			-2.50%
			2.00%
			-3.00%
			Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Next Cal Date / Last Cal Date/ Expiration Date Opened Date
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Notes about this calibration

Calibration Result Calibration Successful

Who Calibrated Steve Demers

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance

Backup

Calibration Report

Instrument Aqua TROLL 600
Serial Number 518534
Created 4/8/2021

Sensor RDO
Serial Number 769854
Last Calibrated 4/8/2021

Calibration Details

Slope 1.201215
Offset 0.00 mg/L

Calibration point 100%

Concentration 8.07 mg/L
Pre Measurement 91.29 %Sat
Post Measurement 100.00 %Sat
Temperature 21.15 °C
Barometric Pressure 1,102.3 mbar

NIST Thermometer : 18.79 °C

Serial No: D16110472

Annual Cal: 27-Jul-2020

Aqua TROLL temp: 18.83 °C

TPJ 4/12/21

Backup

Sensor	pH/ORP
Serial Number	723270
Last Calibrated	4/8/2021

Calibration DetailsCalibration Point 1

pH of Buffer	4.00 pH
pH mV	157.1 mV
Temperature	20.78 °C

Pre Measurement

pH	4.14 pH
pH mV	157.0 mV

Post Measurement

pH	4.00 pH
pH mV	154.9 mV

Calibration Point 2

pH of Buffer	7.02 pH
pH mV	-11.5 mV
Temperature	20.71 °C

Pre Measurement

pH	7.14 pH
pH mV	-11.9 mV

Post Measurement

pH	7.02 pH
pH mV	-11.4 mV

Calibration Point 3

pH of Buffer	10.04 pH
pH mV	-179.6 mV
Temperature	20.88 °C

Pre Measurement

pH	10.11 pH
pH mV	-179.5 mV

Post Measurement

pH	10.04 pH
pH mV	-177.1 mV

Slope and Offset 1

Slope	-55.85 mV/pH
Offset	-10.4 mV

Slope and Offset 2

Slope	-55.64 mV/pH
Offset	-10.4 mV

ORP

Book of

ORP Solution	ORP Standard
Offset	20.0 mV
Temperature	21.08 °C
Pre Measurement	220.6 mV
Post Measurement	240.0 mV

Sensor	Conductivity
Serial Number	691784
Last Calibrated	4/8/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.932
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	1,302.1 µS/cm
Specific Conductivity	1,413.5 µS/cm

Post Measurement

Actual Conductivity	1,301.6 µS/cm
Specific Conductivity	1,413.0 µS/cm

Sensor **Turbidity**

Serial Number	687457
Last Calibrated	Factory Defaults

Sensor **Barometric Pressure**

Serial Number	518534
Last Calibrated	Factory Defaults



DRAFT

Instrument Calibration Logs

UNIT 1

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 4/30/21	Time: 0910	Field Personnel: E. Dyrness					
Meter: (circle one) YSI: Model 600XL or 600XLM	In-Situ: AquaTroll 600	Rental Company: PINE Environmental					
Multimeter Serial Numbers (Sonde & Meter): 695 99Z							
Probe Pre-cleaned Certification Provided By (Personnel): NR Date: 4/7/21							
Temperature Calibration: Personnel: NR Date: 4/7/21							
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C Vendor's check results Unit: 19.17 NIST: 19.12 Difference: 0.05							
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							
BEGINNING CALIBRATION CHECK							
Date: 4/30/21 Time: 1020		Personnel: E. Dyrness					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0	0.01	0 to 0.5 mg/L	Y	683005	7/21	
pH 7 check	7	7.03	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1361	+/- 5%	Y	065667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$	236	238	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10	9.7	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: E. Dyrness (Print) Erik D Dyrness (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK							
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: _____ Time: _____	Personnel: _____						
Zero DO check (mg/l)	0	0 to 0.5 mg/L					
pH 7 check	7	+/- 5%					Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check		4/30/21+/- 5%					Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$		+/- 5%					See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ^s	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ^s	10		+/- 10%				Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: NA (Print) NA (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

NA
|
|

NA
|
|

INSTRUMENT CALIBRATION					
Multimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
DO (% saturation)	100%	✓			Allow time for stabilization per manufacturer
DO mg/l reading	8.03	✓			Record these values immediately after calibration
DO Temp. (°C) reading	21.89	✓			
DO (0% Saturation)-SmarTROLL	0%	✓	G83003	7/21	2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4	✓	15260	5/22	
2nd Standard	7	✓	4972	11/25	
3rd Standard	10	✓	5734	7/22	
Specific Conductance (µS/cm)	718	✓	0GE359	6/21	One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution 21 °C		✓			See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution	236	✓	19D100189	4/24	

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: N/A mm Hg [BP inches N/A x 25.4 + BP N/A mm Hg]

Dissolved Oxygen Charge (YSI Meters): N/A (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.

Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) ✓ Personnel: E. Dymess

Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO or N/A

Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU	✓	A0087	7/21	
3rd Standard	100 NTU	✓	A0091	7/21	
4th Standard	800 NTU	✓	A0090	7/21	

HACH Model (circle one) P or Q Serial Number: 14080C034448 Rental Company: Pine Env.

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by E. Dymess
Print Name

Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration								
Calibration Check Range Values (+/- 5%)								
Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)								
Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

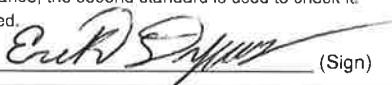
UNIT 2

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 4/30/21	Time: 0915	Field Personnel:	E. Dymess				
Meter: (circle one)	YSI: Model 600XL or 600XLM	In-Situ: AquaTroll 600	Rental Company: PINE Environmental				
Multimeter Serial Numbers (Sonde & Meter): 095538							
Probe Pre-cleaned Certification Provided By (Personnel): NR				Date: 4/7/21			
Temperature Calibration: Personnel: NR				Date: 4/7/21			
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C		Vendor's check results		Unit: ZO,01	NIST: ZO,00	Difference: 0.01	
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							

BEGINNING CALIBRATION CHECK

Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0	0.01	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.04	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1393	+/- 5%	Y	065667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 21°C	236	236	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10	10.0	+/- 10%	Y	40087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: E. Dymess (Print)  (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK

Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: _____ Time: _____	Personnel: _____						
Zero DO check (mg/l)	0		0 to 0.5 mg/L				
pH 7 check	7		+/- 5%				Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1393	+/- 5%				Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 21°C			+/- 5%				See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10		+/- 10%				Range 9.0 - 11.0 NTU (2100Q)

Notes:

- If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
- All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
- If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
- Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
- Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: N/A (Print) N/A (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

N/A
|

N/A
|

INSTRUMENT CALIBRATION					
Date: 4/30/21 Time: 0915					
Multimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
DO (% saturation)	100%	✓			Allow time for stabilization per manufacturer
DO mg/l reading	8.69	✓			Record these values immediately after calibration
DO Temp. (°C) reading	22.09	✓			
DO (0% Saturation)-SmarTROLL	0%	✓	683003	7/21	2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4	✓	1526	5/22	
2nd Standard	7	✓	4972	11/25	
3rd Standard	10	✓	5734	9/22	
Specific Conductance ($\mu\text{S}/\text{cm}$)	718	✓	06E359	6/21	One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution 21°C		✓			See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution	236	✓	19D000149	4/24	

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: N/A mm Hg [BP inches N/A x 25.4 + BP N/A mm Hg]Dissolved Oxygen Charge (YSI Meters): N/A (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) ✓ Personnel: E. Dynness

Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO or N/A

Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabICal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU	✓	A0087	7/21	
3rd Standard	100 NTU	✓	A0091	7/21	
4th Standard	800 NTU	✓	A0090	7/21	

HACH Model (circle one) P or Q Serial Number: 19010CO73387 Rental Company: Pine Env

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by E. Dynness

Print Name

Signature

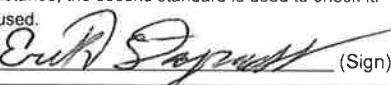
Zobell Solution mV Value Based on Temperature for ORP Calibration								
Calibration Check Range Values (+/- 5%)								
Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)								
Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

UNIT 3

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 4/30/21	Time: 0920	Field Personnel: E. Dymness					
Meter: (circle one)	YSI: Model 600XL or 600XLM	In-Situ: AquaTroll 600	Rental Company: PINE Environmental				
Multimeter Serial Numbers (Sonde & Meter): 685 779							
Probe Pre-cleaned Certification Provided By (Personnel): NR Date: 4/8/21							
Temperature Calibration: Personnel: NR Date: 4/8/21							
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C Vendor's check results Unit: 19.10 NIST: 18.98 Difference: 0.12							
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							
BEGINNING CALIBRATION CHECK							
Date: 4/30/21 Time: 1030		Personnel: E. Dymness					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0	0.01	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.00	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1372	+/- 5%	Y	065667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$	236	236	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10	10.2	+/- 10%	Y	Acos7	6/21	Range 9.0 - 11.0 NTU (2100Q)

Notes:

- If the post calibration check is not within the acceptable range the meter must be recalibrated.
- All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
- If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
- Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
- Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: E. Dymness (Print)  (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK							
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: _____ Time: _____	Personnel: _____						
Zero DO check (mg/l)	0		0 to 0.5 mg/L				
pH 7 check	7		+/- 5%				Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	ET50	4/30/21	+/- 5%				Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$			+/- 5%				See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10		+/- 10%				Range 9.0 - 11.0 NTU (2100Q)

Notes:

- If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
- All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
- If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
- Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
- Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: NA (Print) NA (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

NA
↓

NA
↓

UNIT 3

INSTRUMENT CALIBRATION

Date: 4/30/21 Time: 0920

Multimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
DO (% saturation)	100%	✓			Allow time for stabilization per manufacturer
DO mg/l reading	8.19	✓			Record these values immediately after calibration
DO Temp. (°C) reading	27.17	✓			
DO (0% Saturation)-SmarTROLL	0%	✓	683005	7/21	2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4	✓	1526	5/22	
2nd Standard	7	✓	4972	1/25	
3rd Standard	10	✓	5734	7/22	
Specific Conductance (μS/cm)	718	✓	06E359	6/21	One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution <u>21</u> °C		✓			See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution	236	✓	19D100189	4/24	

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: N/A mm Hg [BP inches N/A x 25.4 + BP N/A mm Hg]Dissolved Oxygen Charge (YSI Meters): N/A (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) ✓ Personnel: E. DynnessChanged YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO or N/AReplaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU	✓	A0087	7/21	
3rd Standard	100 NTU	✓	A0091	7/21	
4th Standard	800 NTU	✓	A0090	7/21	

HACH Model (circle one) P or Q Serial Number: 190100073345 Rental Company: Pine Enu.

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by E. Dynness
Print NameErik Dynness
Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration

Calibration Check Range Values (+/- 5%)

Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)

Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG

Date: 5/3/21 Time: 0850	Field Personnel: B. Fulton
Meter: (circle one) YSI: Model 600XL or 600XLM In-Situ: AquaTroll 600	Rental Company: PINE Environmental
Multimeter Serial Numbers (Sonde & Meter): 695992	
Probe Pre-cleaned Certification Provided By (Personnel): NR	Date: 4/7/21
Temperature Calibration: Personnel: NR	Date: 4/7/21
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C	Vendor's check results Unit: 19.17 NIST: 19.12 Difference: 0.05
<i>* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*</i>	

BEGINNING CALIBRATION CHECK

Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0	0.0	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.05	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1378	+/- 5%	Y	0GJ667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 16°C	243	258	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10	10.1	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- 1) If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - 2) All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B. Fulton (Print) Et Fulton (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK

Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/3/21 Time: 1320		Personnel: B. Fulton					
Zero DO check (mg/l)	0	0.0	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.03	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1388	+/- 5%	Y	0GJ667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 21°C	236	233	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10	10.2	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- 1) If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - 2) All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B. Fulton (Print) Et Fulton (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

N/A
↓

N/A
↓

Unit 1

INSTRUMENT CALIBRATION					
Date:	Time:	Value of Standard	Check as Completed	Lot #	Expiration Date
Multimeter Calibration					Comments
DO (% saturation)	100%				Allow time for stabilization per manufacturer
DO mg/l reading					Record these values immediately after calibration
DO Temp. (°C) reading					
DO (0% Saturation)-SmarTROLL	0%				2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4				
2nd Standard	7				
3rd Standard	10				
Specific Conductance ($\mu\text{S}/\text{cm}$)					513121 One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution _____ °C					See Chart below for ORP-Zobell-Solution-mV-Value Based on Temperature
ORP using Zobell Solution					
Additional Information for Dissolved Oxygen Calibration					
Barometric Pressure of Meter:	NA	mm Hg	[BP inches NA]	x 25.4 + BP	NA mm Hg
Dissolved Oxygen Charge (YSI Meters):	NA	(Acceptable Range: 25 to 75)	You MUST change the membrane if charge is out of range.		
Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed)	<input checked="" type="checkbox"/>	Personnel:	B Fulton		
Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO	<input type="radio"/> N/A				
Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO	<input type="radio"/> NO				
HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabiCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU				
3rd Standard	100 NTU				ENF 513121
4th Standard	800 NTU				
HACH Model (circle one) P or Q Serial Number:					Rental Company:

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by B. Fulton
Print Name

B. Fulton
Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration								
Calibration Check Range Values (+/- 5%)								
Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)								
Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

Unit 2

51321 NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG

Date: 5/13/21	Time: 0855	Field Personnel: B Fulton
Meter: (circle one) YSI: Model 600XL or 600XLM	In-Situ: AquaTroll 600	Rental Company: PINE Environmental
Multimeter Serial Numbers (Sonde & Meter): 695538		
Probe Pre-cleaned Certification Provided By (Personnel): NR		Date: 4/17/21
Temperature Calibration: Personnel: NR		Date: 4/17/21
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C	Vendor's check results Unit: 20.0° NIST: 20.00	Difference: 0.01

* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*

BEGINNING CALIBRATION CHECK

Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0	0.0	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.04	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1401	+/- 5%	Y	0GJ667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 16°C	243	247	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10	10.2	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- 1) If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - 2) All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B Fulton (Print) B Fulton (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK

Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/13/21 Time: 1325		Personnel: B Fulton					
Zero DO check (mg/l)	0	0.0	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.0	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1392	+/- 5%	Y	0GJ667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 21°C	236	236	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10	9.97	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- 1) If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - 2) All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B Fulton (Print) B Fulton (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

N/A
↓

N/A
↓

Unit 2

INSTRUMENT CALIBRATION

Date:	Time:	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Multimeter Calibration						
DO (% saturation)	100%					Allow time for stabilization per manufacturer
DO mg/l reading						
DO Temp. (°C) reading						Record these values immediately after calibration
DO (0% Saturation)-SmarTROLL	0%					2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4		<i>SAT</i>			
2nd Standard	7					
3rd Standard	10			<i>51312</i>		
Specific Conductance ($\mu\text{S}/\text{cm}$)						One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution _____ °C						See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution						

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: NA mm Hg [BP inches NA x 25.4 + BP NA mm Hg]

Dissolved Oxygen Charge (YSI Meters): NA (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.

Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) Personnel: B. fulton

Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO or N/A

Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabiCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU		<i>SAT</i>		
3rd Standard	100 NTU		<i>51312</i>		
4th Standard	800 NTU				

HACH Model (circle one) P or Q Serial Number: _____ Rental Company: _____

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by B. fulton
Print Name

B. fulton
Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration

Calibration Check Range Values (+/- 5%)

Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)

Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

Unit 3

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 5/3/21	Time: 0900	Field Personnel: B. Fulton					
Meter: (circle one)	YSI: Model 600XL or 600XLM	In-Situ	AquaTroll 600	Rental Company: PINE Environmental			
Multimeter Serial Numbers (Sonde & Meter): 685779 N/A							
Probe Pre-cleaned Certification Provided By (Personnel): N/A				Date: 4/18/21			
Temperature Calibration: Personnel: N/A				Date: 4/18/21			
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C				Vendor's check results Unit: 19.10 NIST: 18.98 Difference: 0.12			
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							
BEGINNING CALIBRATION CHECK							
Date: 5/3/21 Time: 0900		Personnel: B. Fulton					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0	0.0	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	6.89	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1360	+/- 5%	Y	0GJ667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 21°C	2435N	239	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10	10.2	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B. Fulton (Print) Et. Fulton (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK							
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/3/21 Time: 1330	Personnel: B. Fulton						
Zero DO check (mg/l)	0	0.0	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.01	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1359	+/- 5%	Y	0GJ667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 21°C	236	234	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10	10.2	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark ✓ in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B. Fulton (Print) Et. Fulton (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

N/A
↓

N/A
↓

UNIT 3

INSTRUMENT CALIBRATION

Date: 5/31/14 Time: 0950

Multimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
DO (% saturation)	100%	N/A			Allow time for stabilization per manufacturer
DO mg/l reading	N/A				Record these values immediately after calibration
DO Temp. (°C) reading	N/A				
DO (0% Saturation)-SmarTROLL	0%		N/A	N/A	2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4				
2nd Standard	7				
3rd Standard	10				
Specific Conductance ($\mu\text{S}/\text{cm}$)	N/A				One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution 18 °C	18	✓			See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution	240	✓	19 Dec 18 9	4/24	

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: N/A mm Hg [BP inches N/A x 25.4 + BP N/A mm Hg]

Dissolved Oxygen Charge (YSI Meters): N/A (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.

Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) ✓ Personnel: B. Fulton

Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO or N/A

Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabiCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU				
3rd Standard	100 NTU		BAF	5/31/14	
4th Standard	800 NTU				

HACH Model (circle one) P or Q Serial Number: Rental Company:

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by B. Fulton

Print Name

Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration

Calibration Check Range Values (+/- 5%)

Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)

Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 5/4/21	Time: 1120	Field Personnel:	B. Fulton				
Meter: (circle one) YSI: Model 600XL or 600XLM	In-Situ:	AquaTroll 600	Rental Company: PINE Environmental				
Multimeter Serial Numbers (Sonde & Meter): <u>NR</u> EAF 695492							
Probe Pre-cleaned Certification Provided By (Personnel): NR			Date: 4/17/21				
Temperature Calibration: Personnel: NR			Date: 4/17/21				
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C			Vendor's check results Unit: 19.17 NIST: 19.17 Difference: 0.0%				
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							
BEGINNING CALIBRATION CHECK							
Date: 5/4/21 Time: 1120		Personnel: B. Fulton					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0	NA	0 to 0.5 mg/L	NA	NA	NA	
pH 7 check	7	NA	+/- 5%	NA	NA	NA	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1382	+/- 5%	Y	OGJ667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$	NA	NA	+/- 5%	NA	NA	NA	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10	NA	+/- 10%	NA	NA	N/A	Range 9.0 - 11.0 NTU (2100Q)

Notes:

- 1) If the post calibration check is not within the acceptable range the meter must be recalibrated.
- 2) All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
- 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
- 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
- 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B. Fulton (Print) B. Fulton (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK							
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/4/21 Time: 1400	Personnel: B. Fulton						
Zero DO check (mg/l)	0	0.0	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.04	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1376	+/- 5%	Y	OGJ667	10/21	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$	241	244	+/- 5%	Y	19D100189	4/14	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10	10.0	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

Notes:

- 1) If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
- 2) All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
- 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
- 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
- 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B. Fulton (Print) B. Fulton (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

N/A
↓

N/A
↓

INSTRUMENT CALIBRATION					
Date:	Time:				
Multimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
DO (% saturation)	100%				Allow time for stabilization per manufacturer
DO mg/l reading					Record these values immediately after calibration
DO Temp. (°C) reading					
DO (0% Saturation)-SmarTROLL	0%	EAF			2 point DO Calibration-for-SmarTROLL only (100 & 0%)
pH 1st Standard	4				
2nd Standard	7	514121			
3rd Standard	10				
Specific Conductance (µS/cm)					One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution °C					See Chart below for ORP-Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution					

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: N/A mm Hg [BP inches N/A x 25.4 + BP N/A mm Hg]

Dissolved Oxygen Charge (YSI Meters): N/A (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.

Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) Personnel: B. Fulton

Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO or N/A

Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU				
3rd Standard	100 NTU	EAF	514121		
4th Standard	800 NTU				

HACH Model (circle one) P or Q Serial Number: _____ Rental Company: _____

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by B. Fulton
Print Name

B. Fulton
Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration

Calibration Check Range Values (+/- 5%)

Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)

Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

Unit 2

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 5/4/21	Time: 1405	Field Personnel: B. Fulton					
Meter: (circle one) YSI: Model 600XL or 600XLM		In-Situ: AquaTroll 600		Rental Company: PINE Environmental			
Multimeter Serial Numbers (Sonde & Meter): 695538							
Probe Pre-cleaned Certification Provided By (Personnel): NR Date: 4/17/21							
Temperature Calibration: Personnel: NR Date: 4/17/21							
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C Vendor's check results Unit: 70.01 NIST: 20.00 Difference: 0.01							
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							
BEGINNING CALIBRATION CHECK							
Date:	Time:	Personnel:					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0		0 to 0.5 mg/L				
pH 7 check	7		+/- 5%				Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check			+/- 5%				Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$			+/- 5%	EAK 5/4/21			See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10		+/- 10%				Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: NA (Print) NA (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK							
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/4/21 Time: 1405		Personnel: B. Fulton					
Zero DO check (mg/l)	0	0.00	0 to 0.5 mg/L	Y	633003	7/21	
pH 7 check	7	7.06	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1445	+/- 5%	Y	6155	2/26	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$	241	242	+/- 5%	Y	19 0100187	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10	10.1	+/- 10%	Y	A0587	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B. Fulton (Print) B. Fulton (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

NIA
↓

NIA
↓

Unit 2

INSTRUMENT CALIBRATION					
Date:	Time:	Value of Standard	Check as Completed	Lot #	Expiration Date
Multimeter Calibration					Comments
DO (% saturation)	100%				Allow time for stabilization per manufacturer
DO mg/l reading					Record these values immediately after calibration
DO Temp. (°C) reading					
DO (0% Saturation)-SmarTROLL	0%	EAF			2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4				
2nd Standard	7	514121			
3rd Standard	10				
Specific Conductance ($\mu\text{S}/\text{cm}$)					One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution ${}^{\circ}\text{C}$					See Chart below for ORP-Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution					
Additional Information for Dissolved Oxygen Calibration					
Barometric Pressure of Meter:	NA	mm Hg	[BP inches NA]	x 25.4 + BP	NA mm Hg
Dissolved Oxygen Charge (YSI Meters):	NA	(Acceptable Range: 25 to 75)	You MUST change the membrane if charge is out of range.		
Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed)	<input checked="" type="checkbox"/>			Personnel:	B. Fulton
Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO	<input type="radio"/>			N/A	
Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO	<input type="radio"/>			NO	
HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU				
3rd Standard	100 NTU	EAF	514121		
4th Standard	800 NTU				
HACH Model (circle one) P or Q Serial Number:				Rental Company:	

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by B. Fulton
Print NameB. Fulton
Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration								
Calibration Check Range Values (+/- 5%)								
Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)								
Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG

Date: 5/4/21	Time: 1410	Field Personnel: B.fulton
Meter: (circle one) YSI: Model 600XL or 600XLM	In-Situ: <u>AquaTroll 600</u>	Rental Company: PINE Environmental
Multimeter Serial Numbers (Sonde & Meter): 685779		
Probe Pre-cleaned Certification Provided By (Personnel): NR		Date: 4/8/21
Temperature Calibration: Personnel: NR		Date: 4/8/21
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C		Vendor's check results Unit: 19.10 NIST: 18.98 Difference: 0.12
<i>* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*</i>		

BEGINNING CALIBRATION CHECK

Date: 5/4/21 Time: 1455		Personnel: E. Dyrness					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0	N/A	0 to 0.5 mg/L	N/A	N/A	N/A	
pH 7 check	7	N/A	+/- 5%	N/A	N/A	N/A	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	N/A	N/A	+/- 5%	N/A	N/A	N/A	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 16°C	243	243	+/- 5%	Y	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10	N/A	+/- 10%	N/A	N/A	N/A	Range 9.0 - 11.0 NTU (2100Q)

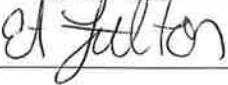
- Notes:
- 1) If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - 2) All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: E. Dyrness (Print)  (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK

Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/4/21 Time: 1410		Personnel: B.fulton					
Zero DO check (mg/l)	0	0.0	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.02	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1371	+/- 5%	Y	6155	2/26	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution 17°C	241	219	+/- 5%	N	19D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10	10.3	+/- 10%	Y	A0087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- 1) If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - 2) All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: B.fulton (Print)  (Sign)

List wells sampled using this equipment on this day **ONLY IF DATA NEEDS TO BE QUALIFIED**

NHP-JCPROD-1
NHP-JCMW-6
NHP-JCMW-2S
N/A

N/A


INSTRUMENT CALIBRATION

Date: 5/4/21 Time: 1450

Multimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
DO (% saturation)	100%	N/A			Allow time for stabilization per manufacturer
DO mg/l reading	N/A				Record these values immediately after calibration
DO Temp. (°C) reading	N/A				
DO (0% Saturation)-SmarTROLL	0%		N/A	N/A	2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4		1	1	
2nd Standard	7		1	1	
3rd Standard	10		1	1	
Specific Conductance ($\mu\text{S}/\text{cm}$)	N/A				One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution 16°C	16	✓			See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution	24.3	✓	19D100189	4/24	

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: N/A mm Hg [BP inches N/A x 25.4 + BP N/A mm Hg]

Dissolved Oxygen Charge (YSI Meters): N/A (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.

Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) ✓ Personnel: E. Dyness

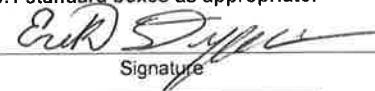
Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO or N/A

Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/StabiCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU				
3rd Standard	100 NTU		EAF	5/4/21	
4th Standard	800 NTU				

HACH Model (circle one) P or Q Serial Number: Rental Company:

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by E. Dyness
Print Name
Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration

Calibration Check Range Values (+/- 5%)

Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)

Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 5/5/21	Time: 1140	Field Personnel: E. Dyness					
Meter: (circle one) YSI: Model 600XL or 600XLM	In-Situ SmartTROLL	Rental Company: PINE ENV.					
Multimeter Serial Numbers (Sonde & Meter): 695992							
Probe Pre-cleaned Certification Provided By (Personnel): NK				Date: 4/7/21			
Temperature Calibration: Personnel: VR				Date: 4/7/21			
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C				Vendor's check results Unit: 19.17 NIST: 19.12 Difference: 0.05			
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							
BEGINNING CALIBRATION CHECK							
Date:	Time:	Personnel:					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0		0 to 0.5 mg/L				
pH 7 check	7		+/- 5%				Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	718		+/- 5%				Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$	5/5/21		+/- 5%				See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P	20		+/- 5%				Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10		+/- 10%				Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: NA (Print) NA (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK							
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/5/21 Time: 1140		Personnel: E. Dyness					
Zero DO check (mg/l)	0	0.05	0 to 0.5 mg/L	Y	683015	7/21	
pH 7 check	7	7.11	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$) Second standard used for check	1413	1431	+/- 5%	Y	6155	2/24	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
ORP check - Zobell (mV) Zobell Solution ${}^{\circ}\text{C}$	247	244	+/- 5%	Y	190100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Turbidity Standard (NTU) 2100P ⁵	20	NA	+/- 5%	N/A	NA	NA	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10	10.10	+/- 10%	Y	10087	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: E. Dyness (Print) E. Dyness (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

NA
1
NA
1

UNIT 1

INSTRUMENT CALIBRATION

Date:	Time:	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Multimeter Calibration						
DO (% saturation)	100%					Allow time for stabilization per manufacturer
DO mg/l reading						
DO Temp. (°C) reading	ESD					Record these values immediately after calibration
DO (0% Saturation)-SmarTROLL	0%					2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	7					
2nd Standard	4					
3rd Standard	10					
Specific Conductance (µS/cm)						One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution °C						See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution						

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: 101 mm Hg [BP inches 104 x 25.4 + BP 101 mm Hg]

Dissolved Oxygen Charge (YSI Meters): N/A (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.

Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) ✓ Personnel: E. Dyness

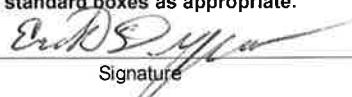
Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO

Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU				Calibrate w/ StabCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU	ESD			
3rd Standard	100 NTU				
4th Standard	800 NTU		5/5/21		

HACH Model (circle one) P or Q Serial Number: Rental Company:

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by E. Dyness
Print Name
SignatureZobell Solution mV Value Based on Temperature for ORP Calibration
Calibration Check Range Values (+/- 5%)

Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)

Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

UNIT 2

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 5/5/21	Time: 1145	Field Personnel: E. Dryness					
Meter: (circle one) YSI: Model 600XL or 600XLM	In-Situ: AquaTroll 600	Rental Company: PINE Environmental					
Multimeter Serial Numbers (Sonde & Meter): 695538							
Probe Pre-cleaned Certification Provided By (Personnel): NR				Date: 4/7/21			
Temperature Calibration: Personnel: NR				Date: 4/7/21			
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C				Vendor's check results	Unit: 20.01	NIST: 20.00	Difference: 0.01
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							
BEGINNING CALIBRATION CHECK							
Date:	Time:	Personnel:					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0		0 to 0.5 mg/L				
pH 7 check	7.00		+/- 5%				Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$)	718		+/- 5%				Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
Second standard used for check	1413		+/- 5%				
ORP check - Zobell (mV)			+/- 5%				See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Zobell Solution $^{\circ}\text{C}$	13						
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10		+/- 10%				Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: NR (Print) NR (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK							
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/5/21 Time: 1145	Personnel: E. Dryness						
Zero DO check (mg/l)	0	0.03	0 to 0.5 mg/L	Y	687005	7/21	
pH 7 check	7	7.07	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$)	718	1385	+/- 5%	Y	6155	2/26	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
Second standard used for check	1413		+/- 5%	Y			
ORP check - Zobell (mV)	247	248	+/- 5%	Y	19D102189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Zobell Solution $^{\circ}\text{C}$	13						
Turbidity Standard (NTU) 2100P ⁵	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ⁵	10	10.4	+/- 10%	Y	A0087	4/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: E. Dryness (Print) Eric Dryness (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED

NA
J

NA
J

INSTRUMENT CALIBRATION					
Date:	Time:	Value of Standard	Check as Completed	Lot #	Expiration Date
Multimeter Calibration					Comments
DO (% saturation)	100%				Allow time for stabilization per manufacturer
DO mg/l reading					Record these values immediately after calibration
DO Temp. (°C) reading	ETSI				
DO (0% Saturation)-SmarTROLL	0%				2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4				
2nd Standard	7	5/5/21			
3rd Standard	10				
Specific Conductance ($\mu\text{S}/\text{cm}$)					One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution $^{\circ}\text{C}$					See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution					
Additional Information for Dissolved Oxygen Calibration					
Barometric Pressure of Meter:	101	mm Hg	[BP inches 14.7 x 25.4 + BP]	101	mm Hg
Dissolved Oxygen Charge (YSI Meters):	NA	(Acceptable Range: 25 to 75)	You MUST change the membrane if charge is out of range.		
Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed)	<input checked="" type="checkbox"/>		Personnel:	E. Dyness	
Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO	<input checked="" type="radio"/>				
Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO	<input checked="" type="radio"/>				
HACH 2100P or 2100Q * Turbidimeter Calibration		Value of Standard	Check as Completed	Lot #	Expiration Date
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU				
3rd Standard	100 NTU	ETSI			
4th Standard	800 NTU			5/5/21	
HACH Model (circle one) P or Q	Serial Number:	Rental Company:			

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by E. Dyness
Print Name

Erik Dyness
Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration								
Calibration Check Range Values (+/- 5%)								
Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)								
Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229

UNIT 3

NHPC INSTRUMENT CALIBRATION / MAINTENANCE LOG							
Date: 5/5/21	Time: 1150	Field Personnel:	E. Dyness				
Meter: (circle one)	YSI: Model 600XL or 600XLM	In-Situ	AquaTroll 600	Rental Company: PINE Environmental			
Multimeter Serial Numbers (Sonde & Meter):		685 779					
Probe Pre-cleaned Certification Provided By (Personnel): MR				Date: 4/8/21			
Temperature Calibration: Personnel: MR				Date: 4/8/21			
Manufacturer's Accuracy Range of Sensor: +/- 0.2°C		Vendor's check results Unit: 19.10		NIST: 18.98		Difference: 0.12	
* When performing calibration checks, wait for temperature and parameter readings to stabilize before recording the results.*							

BEGINNING CALIBRATION CHECK

Date:	Time:	Personnel:					
Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Zero DO check (mg/l)	0		0 to 0.5 mg/L				
pH 7 check	7		+/- 5%				Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$)	718		+/- 5%				Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
Second standard used for check							
ORP check - Zobell (mV)		5/5/21	+/- 5%				See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Zobell Solution $^{\circ}\text{C}$							
Turbidity Standard (NTU) 2100P	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q	10		+/- 10%				Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- 1) If the post calibration check is not within the acceptable range the meter must be recalibrated.
 - 2) All calibration checks must be made in the run mode (on a run/measurement screen) or on the live readings screen, not the calibration mode.
 - 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: NA (Print) NA (Sign)

END OF DAY INSTRUMENT CALIBRATION CHECK

Calibration Check	Value of Standard	Check Results	Acceptable Range	Within Range (yes/no)	Lot #	Expiration Date	Comments
Date: 5/5/21 Time: 1150		Personnel: E. Dyness					
Zero DO check (mg/l)	0	0.06	0 to 0.5 mg/L	Y	683003	7/21	
pH 7 check	7	7.14	+/- 5%	Y	4972	1/25	Range 6.65 - 7.35 pH
Specific Conductance ($\mu\text{S}/\text{cm}$)	1413	1498	+/- 5%	Y	6155	2/26	Range 682 - 754 $\mu\text{S}/\text{cm}$ (718) or Range 1342 - 1484 $\mu\text{S}/\text{cm}$ (1413)
Second standard used for check							
ORP check - Zobell (mV)	247	246	+/- 5%	Y	14D100189	4/24	See Chart on Page 2 for ORP Zobell Solution mV Value Based on Temperature
Zobell Solution $^{\circ}\text{C}$	13						
Turbidity Standard (NTU) 2100P ^s	20	N/A	+/- 5%	N/A	N/A	N/A	Range 19.0 - 21.0 NTU (2100P)
Turbidity Standard (NTU) 2100Q ^s	10	10.1	+/- 10%	Y	Hees7	6/21	Range 9.0 - 11.0 NTU (2100Q)

- Notes:
- 1) If the end of the day calibration check is not within the acceptable range, the data collected that day for that parameter shall be qualified in its use.
 - 2) All calibration checks must be made in the run mode (on a run/measurement screen), not the calibration mode.
 - 3) If the lot numbers and expiration dates are the same as the initial calibration, place a check mark in the appropriate box.
 - 4) Either standard (718 or 1413 $\mu\text{S}/\text{cm}$) may be used to calibrate specific conductance; the second standard is used to check it.
 - 5) Record N/A (Not Applicable) in the boxes for the turbidity meter that was not used.

Calibration Check Performed by: E. Dyness (Print) Erik D. Dyness (Sign)

List wells sampled using this equipment on this day ONLY IF DATA NEEDS TO BE QUALIFIED.

W1
W2
W3
W4

W1
W2
W3
W4

Unit 3

INSTRUMENT CALIBRATION

Date: _____ Time: _____

Multimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
DO (% saturation)	100%				Allow time for stabilization per manufacturer
DO mg/l reading					Record these values immediately after calibration
DO Temp. (°C) reading	E510				
DO (0% Saturation)-SmarTROLL	0%				2 point DO Calibration for SmarTROLL only (100 & 0%)
pH 1st Standard	4	5/5/21			
2nd Standard	7				
3rd Standard	10				
Specific Conductance (µS/cm)					One standard is used to calibrate, second one to check (1413 and 718 standards) Using one standard for both is unacceptable.
Zobell Solution °C					See Chart below for ORP Zobell Solution mV Value Based on Temperature
ORP using Zobell Solution					

Additional Information for Dissolved Oxygen Calibration

Barometric Pressure of Meter: 74 mm Hg [BP inches 27 x 25.4 + BP 74 mm Hg]Dissolved Oxygen Charge (YSI Meters): N/A (Acceptable Range: 25 to 75) You MUST change the membrane if charge is out of range.Inspected DO membrane/RDO CAP for nicks or bubbles (check as completed) E. Dyness Personnel:

Changed YSI Dissolved Oxygen Membrane and Electrolyte Solution (circle one) YES or NO or N/A

Replaced SmarTROLL Rugged Dissolved Oxygen CAP (circle one) YES or NO

HACH 2100P or 2100Q * Turbidimeter Calibration	Value of Standard	Check as Completed	Lot #	Expiration Date	Comments
Turbidity 1st Standard (blank)	<0.1 NTU	N/A	N/A	N/A	Calibrate w/ StabCal® Formazin Primary Turbidity Standards
2nd Standard	20 NTU				
3rd Standard	100 NTU	E510			
4th Standard	800 NTU		5/5/21		

HACH Model (circle one) P or Q Serial Number: _____ Rental Company: _____

* NOTE: the 2100Q does not have a <0.1 standard, record N/A (not applicable) in the <0.1 standard boxes as appropriate.

Calibration Performed by E. Dyness
Print Name _____E. Dyness
Signature

Zobell Solution mV Value Based on Temperature for ORP Calibration

Calibration Check Range Values (+/- 5%)

Round off temperature to whole number (e.g., 23.5 °C rounds up to 24 °C)

Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%	Temp. °C	ORP Zobell Solution mV Value	Calibration Check Range Values +/- 5%
-3	267	254-280	10	251	238-264	23	234	222-246
-2	266	253-279	11	249	237-261	24	232	220-244
-1	265	252-278	12	248	236-260	25	231	219-243
0	264	251-277	13	247	235-259	26	230	219-242
1	262	249-275	14	245	233-257	27	228	217-239
2	261	248-274	15	244	232-256	28	227	216-238
3	260	247-273	16	243	231-255	29	226	215-237
4	258	245-271	17	241	229-253	30	225	214-236
5	257	244-270	18	240	228-252	31	223	212-234
6	256	243-269	19	239	227-251	32	222	211-233
7	254	241-267	20	238	226-250	33	221	210-232
8	253	240-266	21	236	224-248	34	219	208-230
9	252	239-265	22	235	223-247	35	218	207-229



DRAFT

Analytical Laboratory Data Package



DRAFT

ANALYTICAL REPORT

Lab Number:	L2123366
Client:	GZA GeoEnvironmental, Inc. 5 Commerce Park N. Suite 201 Bedford, NH 03110
ATTN:	Tanya Justham
Phone:	(603) 232-8765
Project Name:	NHPC SUPERFUND
Project Number:	Not Specified
Report Date:	05/19/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2123366-01	TRIP BLANK	WATER	MERRIMACK, NH	05/03/21 08:30	05/05/21
L2123366-02	FIELD BLANK-FULTON	WATER	MERRIMACK, NH	05/03/21 11:25	05/05/21
L2123366-03	FIELD BLANK-MURPHY	WATER	MERRIMACK, NH	05/03/21 11:15	05/05/21
L2123366-04	FIELD BLANK-DYRNESS	WATER	MERRIMACK, NH	05/03/21 12:05	05/05/21
L2123366-05	NHP_MW-304S	WATER	MERRIMACK, NH	05/03/21 12:10	05/05/21
L2123366-06	NHP_MW-305S	WATER	MERRIMACK, NH	05/03/21 11:30	05/05/21
L2123366-07	NHP_MW-312S	WATER	MERRIMACK, NH	05/03/21 11:20	05/05/21
L2123366-08	NHP_MW-305D	WATER	MERRIMACK, NH	05/03/21 12:35	05/05/21
L2123366-09	NHP_MW-312D	WATER	MERRIMACK, NH	05/03/21 12:45	05/05/21
L2123366-10	NHP_JCPROD-1	WATER	MERRIMACK, NH	05/04/21 08:30	05/05/21
L2123366-11	NHP_JCMW-6	WATER	MERRIMACK, NH	05/04/21 10:00	05/05/21
L2123366-12	NHP_JCMW-4S	WATER	MERRIMACK, NH	05/04/21 10:15	05/05/21
L2123366-13	NHP_JCMW-2S	WATER	MERRIMACK, NH	05/04/21 11:20	05/05/21
L2123366-14	NHP_MW-402D	WATER	MERRIMACK, NH	05/04/21 09:50	05/05/21
L2123366-15	NHP_MW-310D	WATER	MERRIMACK, NH	05/04/21 11:15	05/05/21
L2123366-16	NHP_MW-109D	WATER	MERRIMACK, NH	05/04/21 13:20	05/05/21
L2123366-17	NHP_MW-307S	WATER	MERRIMACK, NH	05/05/21 09:15	05/05/21
L2123366-18	NHP_MW-307S DUP	WATER	MERRIMACK, NH	05/05/21 09:15	05/05/21
L2123366-19	EQUIP BLANK	WATER	MERRIMACK, NH	05/05/21 10:15	05/05/21
L2123366-20	NHP_MW-109R	WATER	MERRIMACK, NH	05/05/21 10:35	05/05/21
L2123366-21	NHP_MW-109S	WATER	MERRIMACK, NH	05/05/21 10:30	05/05/21
L2123366-22	NHP_MW-109S DUP	WATER	MERRIMACK, NH	05/05/21 10:30	05/05/21

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Case Narrative (continued)

Perfluorinated Alkyl Acids by Isotope Dilution

L2123366-01 through -22: The MeOH fraction of the extraction is reported for the following compounds:

Perfluoroctanesulfonamide (FOSA), N-Methyl Perfluoroctane Sulfonamide (NMeFOSA), N-Ethyl Perfluoroctane Sulfonamide (NEtFOSA), N-Methyl Perfluoroctanesulfonamido Ethanol (NMeFOSE), and N-Ethyl Perfluoroctanesulfonamido Ethanol (NEtFOSE) due to better extraction efficiency of the Surrogates (Extracted Internal Standards).

L2123366-06, -07, -08, -15, -17, and -18: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L2123366-16: The sample was centrifuged and decanted prior to extraction due to sample matrix.

WG1497035-3 and WG1497035-4: The MeOH fraction of the extraction is reported for the following compounds: Perfluoroctanesulfonamide (FOSA), N-Methyl Perfluoroctane Sulfonamide (NMeFOSA), N-Ethyl Perfluoroctane Sulfonamide (NEtFOSA), N-Methyl Perfluoroctanesulfonamido Ethanol (NMeFOSE), and N-Ethyl Perfluoroctanesulfonamido Ethanol (NEtFOSE) due to better extraction efficiency of the Surrogates (Extracted Internal Standards).

WG1497035-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Susan E O'Neil Susan O' Neil

Title: Technical Director/Representative

Date: 05/19/21

DRAFT

ORGANICS



DRAFT

SEMIVOLATILES



Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-01
Client ID: TRIP BLANK
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 08:30
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 03:43
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND	ng/l	1.77	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.77	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.77	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.77	--	--	1
Perfluorohexanoic Acid (PFHxA)	ND	ng/l	1.77	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.77	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.77	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.77	--	--	1
Perfluoroctanoic Acid (PFOA)	ND	ng/l	1.77	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.77	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.77	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.77	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.77	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.77	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.77	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.77	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.77	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.77	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.77	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.77	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.77	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.77	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.77	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	44.2	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.77	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.53	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.53	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-01
 Client ID: TRIP BLANK
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 08:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.77	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.42	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.77	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.77	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		80		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		101		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		80		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		51		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		65		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		71		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		83		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		73		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		58		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		73		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		78		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		75		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		64		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		53		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		74		55-137			
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		69		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		88		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		76		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		81		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		119		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-01
 Client ID: TRIP BLANK
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 08:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 01:56
 Analyst: HT

Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	17.7	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	17.7	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	44.2	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	44.2	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	70		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	66		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	61		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	66		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	60		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-02
Client ID: FIELD BLANK-FULTON
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:25
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 04:00
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND	ng/l	1.78	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.78	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.78	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.78	--	--	1
Perfluorohexanoic Acid (PFHxA)	ND	ng/l	1.78	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.78	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.78	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.78	--	--	1
Perfluoroctanoic Acid (PFOA)	ND	ng/l	1.78	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.78	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.78	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.78	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.78	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.78	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.78	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.78	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.78	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.78	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.78	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.78	--	--	1
Perfluorododecanoic Acid (PFDaO)	ND	ng/l	1.78	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.78	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.78	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	44.4	--	--	1
4,8-Dioxa-3H-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.78	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.56	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.56	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-02
 Client ID: FIELD BLANK-FULTON
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:25
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.78	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.44	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.78	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.78	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		79		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		104		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		78		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		54		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		69		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		73		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		79		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		76		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		56		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		76		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		77		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		75		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		64		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		54		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		81		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		65		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		85		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		88		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		82		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		121		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-02
 Client ID: FIELD BLANK-FULTON
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:25
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 02:04
 Analyst: HT

Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	17.8	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	17.8	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	44.4	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	44.4	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	73		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	68		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	62		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	70		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	69		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-03
Client ID: FIELD BLANK-MURPHY
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 04:16
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND	ng/l	1.77	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.77	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.77	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.77	--	--	1
Perfluorohexanoic Acid (PFHxA)	ND	ng/l	1.77	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.77	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.77	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.77	--	--	1
Perfluoroctanoic Acid (PFOA)	ND	ng/l	1.77	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.77	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.77	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.77	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.77	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.77	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.77	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.77	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.77	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.77	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.77	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.77	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.77	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.77	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.77	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	44.3	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.77	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.54	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.54	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-03
 Client ID: FIELD BLANK-MURPHY
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.77	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.43	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.77	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.77	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		74		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		98		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		73		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		49		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		62		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		66		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		74		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		70		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		52		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		67		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		70		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		73		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		61		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		53		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		79		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		68		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		89		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		92		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		76		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		122		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-03
 Client ID: FIELD BLANK-MURPHY
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 02:11
 Analyst: HT

Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	17.7	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	17.7	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	44.3	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	44.3	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	76		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	67		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	62		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	68		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	68		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-04
Client ID: FIELD BLANK-DYRNESS
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:05
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 04:33
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND	ng/l	1.80	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.80	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.80	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.80	--	--	1
Perfluorohexanoic Acid (PFHxA)	ND	ng/l	1.80	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.80	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.80	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.80	--	--	1
Perfluoroctanoic Acid (PFOA)	ND	ng/l	1.80	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.80	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.80	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.80	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.80	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.80	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.80	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.80	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.80	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.80	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.80	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.80	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.80	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.80	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.80	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	44.9	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.80	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.59	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.59	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-04
 Client ID: FIELD BLANK-DYRNESS
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:05
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.80	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.49	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.80	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.80	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		80		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		107		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		81		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		54		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		67		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		72		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		84		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		77		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		58		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		75		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		78		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		75		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		64		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		56		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		79		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		62		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		88		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		92		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		72		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		125		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-04
 Client ID: FIELD BLANK-DYRNESS
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:05
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/08/21 13:40

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 02:18
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.0	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.0	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	44.9	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	44.9	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		73		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		61		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		59		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		66		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		66		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-05
Client ID: NHP_MW-304S
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:10
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 04:49
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.92	ng/l	1.83	--	--	1
Perfluoropentanoic Acid (PFPeA)	5.40	ng/l	1.83	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.83	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.83	--	--	1
Perfluorohexanoic Acid (PFHxA)	7.18	ng/l	1.83	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.83	--	--	1
Perfluoroheptanoic Acid (PFHpA)	5.67	ng/l	1.83	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.83	--	--	1
Perfluoroctanoic Acid (PFOA)	61.5	ng/l	1.83	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.83	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.83	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.83	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	6.66	ng/l	1.83	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.83	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.83	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.83	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.83	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.83	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.83	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.83	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.83	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.83	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.83	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	45.8	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.83	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.66	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.66	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-05
 Client ID: NHP_MW-304S
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:10
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.83	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.58	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.83	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.83	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		71		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		85		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		79		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		81		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		63		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		68		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		83		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		70		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		65		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		70		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		77		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		68		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		59		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		50		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		74		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		56		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		83		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		74		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		72		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		107		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-05
 Client ID: NHP_MW-304S
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:10
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/08/21 13:40

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 02:25
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.83	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.3	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.3	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	45.8	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	45.8	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	70		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	65		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	62		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	62		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	60		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-06
Client ID: NHP_MW-305S
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:30
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 05:06
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND	ng/l	1.80	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.80	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.80	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.80	--	--	1
Perfluorohexanoic Acid (PFHxA)	ND	ng/l	1.80	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.80	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.80	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.80	--	--	1
Perfluoroctanoic Acid (PFOA)	18.1	ng/l	1.80	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.80	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.80	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.80	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.80	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.80	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.80	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.80	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.80	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.80	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.80	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.80	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.80	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.80	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.80	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	45.1	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.80	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.60	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.60	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-06
 Client ID: NHP_MW-305S
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.80	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.51	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.80	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.80	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	62		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	65		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	49	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	51	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	54	Q	62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	53	Q	59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	56	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	37		24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	65		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	47		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDCA)	76		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	58		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	112		10-206

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-06
 Client ID: NHP_MW-305S
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 02:33
 Analyst: HT

Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.0	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.0	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	45.1	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	45.1	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	77		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	64		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	62		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	67		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	69		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-07
Client ID: NHP_MW-312S
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:20
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 05:23
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	2.01	ng/l	1.82	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.82	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.82	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.82	--	--	1
Perfluorohexanoic Acid (PFHxA)	2.16	ng/l	1.82	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.82	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.82	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.82	--	--	1
Perfluoroctanoic Acid (PFOA)	9.84	ng/l	1.82	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.82	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.82	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.82	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.82	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.82	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.82	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.82	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.82	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.82	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.82	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.82	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.82	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.82	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.82	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	45.6	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.82	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.65	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.65	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-07
 Client ID: NHP_MW-312S
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:20
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.56	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.82	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.82	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	60		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	72		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	55		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	50	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	54	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	77		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	58	Q	62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	51		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	58	Q	59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	66	Q	69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	60	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	53		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	41		24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	65		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	49		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDCA)	76		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	65		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	86		10-206

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-07
 Client ID: NHP_MW-312S
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 11:20
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/08/21 13:40

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 02:40
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.2	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.2	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	45.6	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	45.6	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	71		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	63		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	61		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	64		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	64		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-08
Client ID: NHP_MW-305D
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:35
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 05:39
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.17	ng/l	1.81	--	--	1
Perfluoropentanoic Acid (PFPeA)	7.15	ng/l	1.81	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	9.45	ng/l	1.81	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.81	--	--	1
Perfluorohexanoic Acid (PFHxA)	8.17	ng/l	1.81	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.81	--	--	1
Perfluoroheptanoic Acid (PFHpA)	6.06	ng/l	1.81	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	2.07	ng/l	1.81	--	--	1
Perfluoroctanoic Acid (PFOA)	26.6	ng/l	1.81	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.81	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.81	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.81	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	4.79	ng/l	1.81	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.81	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.81	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.81	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.81	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.81	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.81	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.81	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.81	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.81	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.81	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	45.3	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.81	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.63	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.63	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-08
 Client ID: NHP_MW-305D
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:35
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.81	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.53	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	--	1
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)		63				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		81				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		78				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		66				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	52	Q				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	56	Q				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		84				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	59	Q				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		57				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	58	Q				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		75				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	60	Q				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		59				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		41				24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		65				55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		48				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		79				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		87				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		64				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		106				10-206

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-08
 Client ID: NHP_MW-305D
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:35
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/08/21 13:40

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 02:47
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.1	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.1	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	45.3	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	45.3	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	69		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	65		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	62		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	66		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	60		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-09
Client ID: NHP_MW-312D
Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:45
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/10/21 05:56
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.95	ng/l	1.85	--	--	1
Perfluoropentanoic Acid (PFPeA)	7.66	ng/l	1.85	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.85	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.85	--	--	1
Perfluorohexanoic Acid (PFHxA)	9.92	ng/l	1.85	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.85	--	--	1
Perfluoroheptanoic Acid (PFHpA)	8.41	ng/l	1.85	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.85	--	--	1
Perfluoroctanoic Acid (PFOA)	42.7	ng/l	1.85	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.85	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.85	--	--	1
Perfluorononanoic Acid (PFNA)	2.49	ng/l	1.85	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	2.58	ng/l	1.85	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.85	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.85	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.85	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.85	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.85	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.85	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.85	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.85	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.85	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.85	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	46.3	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.85	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.70	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.70	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-09
 Client ID: NHP_MW-312D
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:45
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.85	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.63	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.85	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.85	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		76		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		92		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		76		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		75		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		64		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		71		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		85		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		73		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		62		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		70		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		72		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		71		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		58		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		54		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		78		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		63		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		82		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		100		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		79		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		120		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-09
 Client ID: NHP_MW-312D
 Sample Location: MERRIMACK, NH

Date Collected: 05/03/21 12:45
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 02:54
 Analyst: HT

Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.85	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.5	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.5	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	46.3	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	46.3	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	72		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	62		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	59		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	68		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	66		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-10
Client ID: NHP_JCPROD-1
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 08:30
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/16/21 06:18
Analyst: SG

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.73	ng/l	1.76	--	--	1
Perfluoropentanoic Acid (PFPeA)	9.16	ng/l	1.76	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	5.34	ng/l	1.76	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.76	--	--	1
Perfluorohexanoic Acid (PFHxA)	9.96	ng/l	1.76	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.76	--	--	1
Perfluoroheptanoic Acid (PFHpA)	7.21	ng/l	1.76	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	2.48	ng/l	1.76	--	--	1
Perfluoroctanoic Acid (PFOA)	33.0	ng/l	1.76	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.76	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.76	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.76	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	3.03	ng/l	1.76	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.76	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.76	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.76	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.76	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.76	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.76	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.76	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.76	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.76	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.76	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	44.0	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.76	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.52	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.52	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-10
 Client ID: NHP_JCPROD-1
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 08:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.76	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.40	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.76	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.76	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	93		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	89		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	73		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	93		10-206

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-10
 Client ID: NHP_JCPROD-1
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 08:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/11/21 09:32

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/18/21 23:23
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	17.6	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	17.6	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	44.0	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	44.0	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		70		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		65		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		62		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		78		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		74		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-11
Client ID: NHP_JCMW-6
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 10:00
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/16/21 06:51
Analyst: SG

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	7.02		ng/l	1.87	--	1
Perfluoropentanoic Acid (PFPeA)	11.8		ng/l	1.87	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.87	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.87	--	1
Perfluorohexanoic Acid (PFHxA)	21.1		ng/l	1.87	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.87	--	1
Perfluoroheptanoic Acid (PFHpA)	19.8		ng/l	1.87	--	1
Perfluorohexanesulfonic Acid (PFHxS)	6.05		ng/l	1.87	--	1
Perfluoroctanoic Acid (PFOA)	79.5		ng/l	1.87	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.87	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.87	--	1
Perfluorooctanesulfonic Acid (PFOS)	17.0		ng/l	1.87	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.87	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.87	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.87	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.87	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.87	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.87	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.87	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.8	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.87	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.74	--	1
Perfluoroctadecanoic Acid (PFODA)	ND		ng/l	3.74	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-11
 Client ID: NHP_JCMW-6
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 10:00
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.87	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.68	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.87	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.87	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	64		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	41		24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	62		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	42		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	58		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	90		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	70		10-206

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-11
 Client ID: NHP_JCMW-6
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 10:00
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/11/21 09:32

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/18/21 23:38
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.87	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.7	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.7	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	46.8	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	46.8	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		63		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		63		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		61		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		65		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		64		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-12
Client ID: NHP_JCMW-4S
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 10:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 18:11
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.02		ng/l	1.84	--	1
Perfluoropentanoic Acid (PFPeA)	5.49		ng/l	1.84	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	--	1
Perfluorohexanoic Acid (PFHxA)	6.68		ng/l	1.84	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	--	1
Perfluoroheptanoic Acid (PFHpA)	4.02		ng/l	1.84	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	--	1
Perfluoroctanoic Acid (PFOA)	24.6		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	--	1
Perfluorooctanesulfonic Acid (PFOS)	16.7		ng/l	1.84	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.84	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	--	1
Perfluorododecanoic Acid (PFDaO)	ND		ng/l	1.84	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.0	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.68	--	1
Perfluoroctadecanoic Acid (PFODA)	ND		ng/l	3.68	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-12
 Client ID: NHP_JCMW-4S
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 10:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.84	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.60	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.84	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		85		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		77		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		99		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		78		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		71		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		78		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		95		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		87		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		103		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		82		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		88		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		78		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		131		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		69		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		86		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		83		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		80		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		76		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		85		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		149		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-12
 Client ID: NHP_JCMW-4S
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 10:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/11/21 09:32

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/18/21 23:52
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.4	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.4	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	46.0	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	46.0	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	70		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	61		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	56		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	66		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	67		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-13
Client ID: NHP_JCMW-2S
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 11:20
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 18:27
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.84	--	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.84	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	--	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.84	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	--	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.84	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.84	--	1
Perfluoroctanoic Acid (PFOA)	20.6		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.84	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.84	--	1
Perfluorooctanesulfonic Acid (PFOS)	3.49	F	ng/l	1.84	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.84	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.84	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.84	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.84	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.84	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.84	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.84	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.84	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.0	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.84	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.68	--	1
Perfluoroctadecanoic Acid (PFODA)	ND		ng/l	3.68	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-13
 Client ID: NHP_JCMW-2S
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 11:20
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.84	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.60	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.84	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	94		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	101		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	83		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	173		10-206

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-13
 Client ID: NHP_JCMW-2S
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 11:20
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/11/21 09:32

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 00:21
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.4	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.4	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	46.0	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	46.0	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		58		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		60		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		59		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		61		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		60		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-14
Client ID: NHP_MW-402D
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 09:50
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 18:44
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	5.35		ng/l	1.83	--	1
Perfluoropentanoic Acid (PFPeA)	8.08		ng/l	1.83	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.83	--	1
Perfluorohexanoic Acid (PFHxA)	10.2		ng/l	1.83	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.83	--	1
Perfluoroheptanoic Acid (PFHpA)	7.21		ng/l	1.83	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.83	--	1
Perfluoroctanoic Acid (PFOA)	26.0		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.83	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.83	--	1
Perfluorononanoic Acid (PFNA)	2.61		ng/l	1.83	--	1
Perfluorooctanesulfonic Acid (PFOS)	2.83	F	ng/l	1.83	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.83	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.83	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.83	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.83	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.83	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.83	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.83	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.83	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.83	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.83	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	45.8	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.83	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.66	--	1
Perfluoroctadecanoic Acid (PFODA)	ND		ng/l	3.66	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-14
 Client ID: NHP_MW-402D
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 09:50
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.83	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.58	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.83	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.83	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		67		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		70		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		93		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		86		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		57		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		63		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		91		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		70		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		107		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		66		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		80		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		75		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		119		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		55		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		78		55-137			
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		72		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		77		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		76		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		63		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		165		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-14
 Client ID: NHP_MW-402D
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 09:50
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528

Matrix: Water

Extraction Date: 05/11/21 09:32

Analytical Method: 134,LCMSMS-ID

Analytical Date: 05/19/21 00:28

Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.83	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.3	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.3	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	45.8	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	45.8	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	64		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	62		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	60		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	64		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	62		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-15
Client ID: NHP_MW-310D
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 11:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 19:00
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	4.15	ng/l	1.86	--	--	1
Perfluoropentanoic Acid (PFPeA)	7.86	ng/l	1.86	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	2.84	ng/l	1.86	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.86	--	--	1
Perfluorohexanoic Acid (PFHxA)	9.48	ng/l	1.86	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.86	--	--	1
Perfluoroheptanoic Acid (PFHpA)	7.51	ng/l	1.86	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	2.12	ng/l	1.86	--	--	1
Perfluoroctanoic Acid (PFOA)	39.6	ng/l	1.86	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.86	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.86	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.86	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.86	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.86	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.86	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.86	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.86	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.86	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.86	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.86	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.86	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.86	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.86	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	46.4	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.86	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.71	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.71	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-15
 Client ID: NHP_MW-310D
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 11:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.86	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.64	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.86	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.86	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		66				58-132	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		69				62-163	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		99				70-131	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		86				12-142	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	55			Q	57-129		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	58			Q	60-129		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		99				71-134	
Perfluoro[13C8]Octanoic Acid (M8PFOA)		66				62-129	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		99				14-147	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		64				59-139	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		86				69-131	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		73				62-124	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		112				10-162	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54					24-116	
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		83				55-137	
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72					27-126	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		85				48-131	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		97				22-136	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	64					10-165	
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		170				10-206	

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-15
 Client ID: NHP_MW-310D
 Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 11:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/11/21 09:32

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 00:36
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.6	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.6	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	46.4	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	46.4	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	66		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	58		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	56		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	65		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	66		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-16
Client ID: NHP_MW-109D
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 13:20
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 19:17
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND	ng/l	1.78	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.78	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.78	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.78	--	--	1
Perfluorohexanoic Acid (PFHxA)	ND	ng/l	1.78	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.78	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.78	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.78	--	--	1
Perfluoroctanoic Acid (PFOA)	ND	ng/l	1.78	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.78	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.78	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.78	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.78	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.78	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.78	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.78	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.78	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.78	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.78	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.78	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.78	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.78	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.78	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	44.5	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.78	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.56	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.56	--	--	1

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-16
Client ID: NHP_MW-109D
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 13:20
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.78	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.45	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.78	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.78	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		86		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		94		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		98		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		79		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		76		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		81		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		96		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		89		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		98		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		78		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		87		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		86		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		122		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		71		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		91		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		87		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		94		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		88		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		90		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		187		10-206			

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-16
Client ID: NHP_MW-109D
Sample Location: MERRIMACK, NH

Date Collected: 05/04/21 13:20
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/19/21 00:43
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	17.8	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	17.8	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	44.5	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	44.5	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		70		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		65		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		62		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		66		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		67		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-17
Client ID: NHP_MW-307S
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 09:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 19:33
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.84	ng/l	1.82	--	--	1
Perfluoropentanoic Acid (PFPeA)	11.2	ng/l	1.82	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	3.07	ng/l	1.82	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.82	--	--	1
Perfluorohexanoic Acid (PFHxA)	11.7	ng/l	1.82	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.82	--	--	1
Perfluoroheptanoic Acid (PFHpA)	9.43	ng/l	1.82	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	2.03	ng/l	1.82	--	--	1
Perfluoroctanoic Acid (PFOA)	62.7	ng/l	1.82	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.82	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.82	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.82	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	2.25	ng/l	1.82	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.82	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.82	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.82	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.82	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.82	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.82	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.82	--	--	1
Perfluorododecanoic Acid (PFDaO)	ND	ng/l	1.82	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.82	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.82	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	45.5	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.82	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.64	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.64	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-17
 Client ID: NHP_MW-307S
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 09:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.82	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.55	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.82	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.82	--	1
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)		58				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59	Q		62-163		
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80			70-131		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	68			12-142		
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	48	Q		57-129		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	52	Q		60-129		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78			71-134		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	56	Q		62-129		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82			14-147		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	52	Q		59-139		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	65	Q		69-131		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	56	Q		62-124		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89			10-162		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43			24-116		
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	65			55-137		
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51			27-126		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65			48-131		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57			22-136		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	55			10-165		
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	107			10-206		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-17
Client ID: NHP_MW-307S
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 09:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/19/21 00:50
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.2	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.2	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	45.5	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	45.5	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		61		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		61		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		56		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		66		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		64		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-18
Client ID: NHP_MW-307S DUP
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 09:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 19:50
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.60	ng/l	1.84	--	--	1
Perfluoropentanoic Acid (PFPeA)	11.1	ng/l	1.84	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	2.98	ng/l	1.84	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.84	--	--	1
Perfluorohexanoic Acid (PFHxA)	11.6	ng/l	1.84	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.84	--	--	1
Perfluoroheptanoic Acid (PFHpA)	9.76	ng/l	1.84	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	2.04	ng/l	1.84	--	--	1
Perfluoroctanoic Acid (PFOA)	59.2	ng/l	1.84	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.84	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.84	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.84	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	2.58	ng/l	1.84	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.84	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.84	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.84	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.84	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.84	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.84	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.84	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.84	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.84	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.84	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	46.1	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.84	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.69	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.69	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-18
 Client ID: NHP_MW-307S DUP
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 09:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.84	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.61	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.84	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.84	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		64				58-132	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		69				62-163	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		92				70-131	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		77				12-142	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	55			Q	57-129		
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	58			Q	60-129		
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88				71-134		
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66				62-129		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93				14-147		
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	62				59-139		
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	73				69-131		
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	67				62-124		
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103				10-162		
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47				24-116		
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	70				55-137		
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	55				27-126		
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDCA)	74				48-131		
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60				22-136		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	60				10-165		
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	112				10-206		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-18
Client ID: NHP_MW-307S DUP
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 09:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/19/21 00:57
Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.84	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.4	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.4	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	46.1	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	46.1	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		67		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		66		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		63		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		70		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		69		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-19
Client ID: EQUIP BLANK
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:15
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 20:06
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND	ng/l	1.81	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.81	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.81	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.81	--	--	1
Perfluorohexanoic Acid (PFHxA)	ND	ng/l	1.81	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.81	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.81	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.81	--	--	1
Perfluoroctanoic Acid (PFOA)	ND	ng/l	1.81	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.81	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.81	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.81	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.81	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.81	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.81	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.81	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.81	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.81	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.81	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.81	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.81	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.81	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.81	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	45.3	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.81	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.62	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.62	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-19
 Client ID: EQUIP BLANK
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.81	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.53	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.81	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.81	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		91		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		102		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		105		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		83		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		84		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		85		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		100		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		95		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		104		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		86		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		92		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		88		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		134		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		72		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		94		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		85		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		99		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		109		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		105		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		194		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-19
 Client ID: EQUIP BLANK
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:15
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 01:05
 Analyst: HT

Extraction Date: 05/11/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.1	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.1	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	45.3	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	45.3	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		65		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		69		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		62		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		68		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		69		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-20
Client ID: NHP_MW-109R
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:35
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 20:23
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND	ng/l	1.91	--	--	1
Perfluoropentanoic Acid (PFPeA)	ND	ng/l	1.91	--	--	1
Perfluorobutanesulfonic Acid (PFBS)	ND	ng/l	1.91	--	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ng/l	1.91	--	--	1
Perfluorohexanoic Acid (PFHxA)	ND	ng/l	1.91	--	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND	ng/l	1.91	--	--	1
Perfluoroheptanoic Acid (PFHpA)	ND	ng/l	1.91	--	--	1
Perfluorohexanesulfonic Acid (PFHxS)	ND	ng/l	1.91	--	--	1
Perfluoroctanoic Acid (PFOA)	ND	ng/l	1.91	--	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ng/l	1.91	--	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ng/l	1.91	--	--	1
Perfluorononanoic Acid (PFNA)	ND	ng/l	1.91	--	--	1
Perfluorooctanesulfonic Acid (PFOS)	ND	ng/l	1.91	--	--	1
Perfluorodecanoic Acid (PFDA)	ND	ng/l	1.91	--	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ng/l	1.91	--	--	1
Perfluorononanesulfonic Acid (PFNS)	ND	ng/l	1.91	--	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ng/l	1.91	--	--	1
Perfluoroundecanoic Acid (PFUnA)	ND	ng/l	1.91	--	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND	ng/l	1.91	--	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ng/l	1.91	--	--	1
Perfluorododecanoic Acid (PFDoA)	ND	ng/l	1.91	--	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND	ng/l	1.91	--	--	1
Perfluorotetradecanoic Acid (PFTA)	ND	ng/l	1.91	--	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ng/l	47.7	--	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ng/l	1.91	--	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND	ng/l	3.82	--	--	1
Perfluoroctadecanoic Acid (PFODA)	ND	ng/l	3.82	--	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-20
 Client ID: NHP_MW-109R
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:35
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.91	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.77	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.91	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.91	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	79		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	97		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	77		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	82		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	151		10-206

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-20
 Client ID: NHP_MW-109R
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:35
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/11/21 09:32

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 01:12
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.91	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	19.1	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	19.1	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	47.7	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	47.7	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	55		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	54		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	56		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	66		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	58		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-21
Client ID: NHP_MW-109S
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:30
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 20:40
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	5.64		ng/l	1.86	--	1
Perfluoropentanoic Acid (PFPeA)	6.86		ng/l	1.86	--	1
Perfluorobutanesulfonic Acid (PFBS)	5.11		ng/l	1.86	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.86	--	1
Perfluorohexanoic Acid (PFHxA)	7.93		ng/l	1.86	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.86	--	1
Perfluoroheptanoic Acid (PFHpA)	7.62		ng/l	1.86	--	1
Perfluorohexanesulfonic Acid (PFHxS)	3.92		ng/l	1.86	--	1
Perfluoroctanoic Acid (PFOA)	53.2		ng/l	1.86	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.86	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	--	1
Perfluorooctanesulfonic Acid (PFOS)	4.38		ng/l	1.86	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.86	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	--	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	46.6	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.86	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.73	--	1
Perfluoroctadecanoic Acid (PFODA)	ND		ng/l	3.73	--	1

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-21
Client ID: NHP_MW-109S
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:30
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab

Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.86	--	1
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.66	--	1
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.86	--	1
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUDS)	ND		ng/l	1.86	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	77		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	59		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	71		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	99		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	71		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	56		24-116
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)	79		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	70		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	133		10-206

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-21
 Client ID: NHP_MW-109S
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
 Extraction Date: 05/11/21 09:32

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 01:19
 Analyst: HT

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	18.6	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	18.6	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	46.6	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	46.6	--	1
Surrogate (Extracted Internal Standard)		% Recovery	Qualifier	Acceptance Criteria		
Perfluoro[13C8]Octanesulfonamide (M8FOSA)		68		10-112		
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)		69		10-161		
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)		67		10-160		
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)		66		10-189		
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)		66		10-187		

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-22
Client ID: NHP_MW-109S DUP
Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:30
Date Received: 05/05/21
Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/18/21 21:13
Analyst: MP

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	5.84		ng/l	1.93	--	1
Perfluoropentanoic Acid (PFPeA)	7.02		ng/l	1.93	--	1
Perfluorobutanesulfonic Acid (PFBS)	5.06		ng/l	1.93	--	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.93	--	1
Perfluorohexanoic Acid (PFHxA)	7.57		ng/l	1.93	--	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.93	--	1
Perfluoroheptanoic Acid (PFHpA)	8.15		ng/l	1.93	--	1
Perfluorohexanesulfonic Acid (PFHxS)	4.06		ng/l	1.93	--	1
Perfluoroctanoic Acid (PFOA)	54.9		ng/l	1.93	--	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.93	--	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.93	--	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.93	--	1
Perfluorooctanesulfonic Acid (PFOS)	4.07		ng/l	1.93	--	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.93	--	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.93	--	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.93	--	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.93	--	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.93	--	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.93	--	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.93	--	1
Perfluorododecanoic Acid (PFDaO)	ND		ng/l	1.93	--	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.93	--	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.93	--	1
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	48.2	--	1
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	1.93	--	1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	3.86	--	1
Perfluoroctadecanoic Acid (PFODA)	ND		ng/l	3.86	--	1

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-22
 Client ID: NHP_MW-109S DUP
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab							
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	1.93	--	1	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	4.82	--	1	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	1.93	--	1	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	1.93	--	1	
Surrogate (Extracted Internal Standard)		% Recovery		Qualifier		Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)		70		58-132			
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)		75		62-163			
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)		101		70-131			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)		85		12-142			
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)		60		57-129			
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)		66		60-129			
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)		100		71-134			
Perfluoro[13C8]Octanoic Acid (M8PFOA)		74		62-129			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)		100		14-147			
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		70		59-139			
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		80		69-131			
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		71		62-124			
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		113		10-162			
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		57		24-116			
Perfluoro[1,2,3,4,5,6-7-13C7]Undecanoic Acid (M7-PFUDA)		79		55-137			
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		69		27-126			
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDCA)		79		48-131			
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		52		22-136			
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		73		10-165			
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		106		10-206			

Project Name: NHPC SUPERFUND

Lab Number: L2123366

Project Number: Not Specified

Report Date: 05/19/21

SAMPLE RESULTS

Lab ID: L2123366-22
 Client ID: NHP_MW-109S DUP
 Sample Location: MERRIMACK, NH

Date Collected: 05/05/21 10:30
 Date Received: 05/05/21
 Field Prep: Not Specified

Sample Depth:

Extraction Method: ALPHA 23528

Matrix: Water
 Analytical Method: 134,LCMSMS-ID
 Analytical Date: 05/19/21 01:26
 Analyst: HT

Extraction Date: 05/11/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.93	--	1
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	19.3	--	1
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	19.3	--	1
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	48.2	--	1
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	48.2	--	1

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	58		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	53		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	64		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	57		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/09/21 23:51
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s):	01-09			Batch:	WG1496267-1
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/09/21 23:51
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-09				Batch:	WG1496267-1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	--
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	--
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	5.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/09/21 23:51
Analyst: HT

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-09				Batch: WG1496267-1	

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	92		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	32		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	88		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	101		10-206

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/12/21 14:51
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/08/21 13:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-09				Batch: WG1496267-1	
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	20.0	--
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	20.0	--
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	50.0	--
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	50.0	--

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	81		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	71		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	69		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	86		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	85		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/12/21 15:56
Analyst: RS

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s):	10-22			Batch: WG1497035-1	
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	ND		ng/l	20.0	--
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	ND		ng/l	20.0	--
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	ND		ng/l	50.0	--
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	ND		ng/l	50.0	--

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	61		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	52		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	52		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	63		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	60		10-187

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/16/21 05:12
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s):	10-22			Batch:	WG1497035-1
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	--
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	--
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	--
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	--
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	--
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	--
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	--
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	--
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	--
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	--
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	--
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	--
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	--
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	--
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	--
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	--
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	--
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	--
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	--
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	--
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	--
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND		ng/l	50.0	--
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND		ng/l	2.00	--

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/16/21 05:12
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s):	10-22			Batch:	WG1497035-1
Perfluorohexadecanoic Acid (PFHxDA)	ND		ng/l	4.00	--
Perfluorooctadecanoic Acid (PFODA)	ND		ng/l	4.00	--
Perfluorododecane Sulfonic Acid (PFDoDS)	ND		ng/l	2.00	--
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND		ng/l	5.00	--
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND		ng/l	2.00	--
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND		ng/l	2.00	--

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Method Blank Analysis Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 05/16/21 05:12
Analyst: SG

Extraction Method: ALPHA 23528
Extraction Date: 05/11/21 09:32

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 10-22			Batch: WG1497035-1		

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	92		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	101		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	49		10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	93		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	94		10-206

Lab Control Sample Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	<i>LCS</i> %Recovery	<i>LCS</i> Qual	<i>LCSD</i> %Recovery	<i>LCSD</i> Qual	%Recovery Limits	<i>RPD</i>	<i>RPD</i> Qual	<i>RPD</i> Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 Batch: WG1496267-2								
Perfluorobutanoic Acid (PFBA)	104		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	108		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	100		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	120		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	106		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	94		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	103		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	100		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	106		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	123		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	112		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	115		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	105		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	118		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	98		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	113		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	113		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	100		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	100		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	99		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	111		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	<i>LCS</i> %Recovery	<i>LCS</i> Qual	<i>LCSD</i> %Recovery	<i>LCSD</i> Qual	<i>%Recovery</i> <i>Limits</i>	<i>RPD</i>	<i>RPD</i> Qual	<i>RPD</i> <i>Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 Batch: WG1496267-2								
Perfluorotridecanoic Acid (PFTrDA)	134		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	123		-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	117		-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	105		-		69-143	-		30
Perfluorohexadecanoic Acid (PFHxDA)	103		-		40-167	-		30
Perfluorooctadecanoic Acid (PFODA)	84		-		10-119	-		30
Perfluorododecane Sulfonic Acid (PFDoDS)	105		-		85-154	-		30
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	125		-		81-188	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	87		-		55-158	-		30
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	81		-		52-156	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 Batch: WG1496267-2

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78				70-131
1H,1H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	55				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHxA)	68				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	79				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72				62-129
1H,1H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	57				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75				62-124
1H,1H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	69				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	130				10-206

Lab Control Sample Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	<i>LCS</i> %Recovery	<i>LCS</i> Qual	<i>LCSD</i> %Recovery	<i>LCSD</i> Qual	<i>%Recovery</i> <i>Limits</i>	<i>RPD</i>	<i>RPD</i> Qual	<i>RPD</i> <i>Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 Batch: WG1496267-2								
Perfluoroctanesulfonamide (FOSA)	97	-	-	-	46-170	-	-	30
N-Methyl Perfluoroctane Sulfonamide (NMeFOSA)	110	-	-	-	10-185	-	-	30
N-Ethyl Perfluoroctane Sulfonamide (NEtFOSA)	102	-	-	-	10-202	-	-	30
N-Methyl Perfluoroctanesulfonamido Ethanol (NMeFOSE)	103	-	-	-	10-209	-	-	30
N-Ethyl Perfluoroctanesulfonamido Ethanol (NEtFOSE)	114	-	-	-	66-176	-	-	30

Surrogate (Extracted Internal Standard)	<i>LCS</i> %Recovery	<i>LCS</i> Qual	<i>LCSD</i> %Recovery	<i>LCSD</i> Qual	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	86	-	-	-	10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	75	-	-	-	10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	75	-	-	-	10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	82	-	-	-	10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	81	-	-	-	10-187

Lab Control Sample Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	<i>LCS</i> %Recovery	<i>LCSD</i> %Recovery	%Recovery Limits		<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
	Qual	Qual	R	D			
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-22 Batch: WG1497035-2							
Perfluoroctanesulfonamide (FOSA)	97	-	46-170	-	-	-	30
N-Methyl Perfluoroctane Sulfonamide (NMeFOSA)	126	-	10-185	-	-	-	30
N-Ethyl Perfluoroctane Sulfonamide (NEtFOSA)	111	-	10-202	-	-	-	30
N-Methyl Perfluoroctanesulfonamido Ethanol (NMeFOSE)	109	-	10-209	-	-	-	30
N-Ethyl Perfluoroctanesulfonamido Ethanol (NEtFOSE)	114	-	66-176	-	-	-	30

Surrogate (Extracted Internal Standard)	<i>LCS</i> %Recovery	<i>LCSD</i> %Recovery	Acceptance Criteria
	Qual	Qual	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	70	-	10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	54	-	10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	55	-	10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	66	-	10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	68	-	10-187

Lab Control Sample Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	<i>LCS</i> %Recovery	<i>LCS</i> Qual	<i>LCSD</i> %Recovery	<i>LCSD</i> Qual	%Recovery Limits	<i>RPD</i>	<i>RPD</i> Qual	<i>RPD</i> Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-22 Batch: WG1497035-2								
Perfluorobutanoic Acid (PFBA)	104		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	105		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	96		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	109		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	105		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	105		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	105		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	122		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	98		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	112		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	101		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	101		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	117		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	100		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	127		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	116		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	120		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	104		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	116		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	117		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	113		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	111		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	<i>LCS</i> %Recovery	<i>LCSD</i> %Recovery	<i>%Recovery</i> <i>Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> <i>Limits</i>
	<i>Qual</i>	<i>Qual</i>				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-22 Batch: WG1497035-2						
Perfluorotridecanoic Acid (PFTrDA)	128	-	48-158	-	-	30
Perfluorotetradecanoic Acid (PFTA)	113	-	59-182	-	-	30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	106	-	57-162	-	-	30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	99	-	69-143	-	-	30
Perfluorohexadecanoic Acid (PFHxDA)	157	-	40-167	-	-	30
Perfluorooctadecanoic Acid (PFODA)	75	-	10-119	-	-	30
Perfluorododecane Sulfonic Acid (PFDoDS)	120	-	85-154	-	-	30
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	137	-	81-188	-	-	30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	105	-	55-158	-	-	30
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	115	-	52-156	-	-	30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-22 Batch: WG1497035-2

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105				70-131
1H,1H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHxA)	90				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96				62-129
1H,1H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	97				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94				62-124
1H,1H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	48				10-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93				22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	91				10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	108				10-206

Matrix Spike Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-09 QC Batch ID: WG1496267-3 QC Sample: L2122548-01 Client ID: MS Sample												
Perfluorobutanoic Acid (PFBA)	ND	39.4	42.1	103		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	39.4	43.7	109		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	35	35.5	100		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	36.9	42.2	114		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	ND	39.4	42.8	107		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	37.1	36.0	97		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	39.4	40.7	102		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	36	36.2	100		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	ND	39.4	41.4	103		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	37.5	45.7	122		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHps)	ND	37.5	43.0	115		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	ND	39.4	44.5	113		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	36.6	39.6	106		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	39.4	39.5	100		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	37.8	35.9	95		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	37.9	32.8	86		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	39.4	45.4	115		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.4	41.4	105		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	38	34.3	90		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	39.4	35.0	89		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid-Linear (L-NEtFOSAA)	ND	39.4	40.7	103		-	-		45-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic	ND	39.4	40.9	104		-	-		45-170	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab				Associated sample(s): 01-09		QC Batch ID: WG1496267-3		QC Sample: L2122548-01		Client ID: MS		
Sample												
Acid (NEtFOSAA)												
Perfluorododecanoic Acid (PFDa)	ND	39.4	41.6	106		-	-	67-153	-	30		
Perfluorotridecanoic Acid (PFTrDA)	ND	39.4	47.4	120		-	-	48-158	-	30		
Perfluorotetradecanoic Acid (PFTA)	ND	39.4	39.9	101		-	-	59-182	-	30		
N-Methyl Perfluoroctane Sulfonamide (NMeFOSA)	ND	394	463	117		-	-	10-185	-	30		

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	48				10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	61				12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	55				14-147
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	51				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	42				24-116
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	58				10-161
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	54	Q			55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	54	Q			62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	60				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	72				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74				22-136
Perfluoro[13C4]Butanoic Acid (MPFBA)	70				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	73				10-112

Matrix Spike Analysis
Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Sample				Associated sample(s): 01-09		QC Batch ID: WG1496267-3		QC Sample: L2122548-01		Client ID: MS		

Surrogate (Extracted Internal Standard)	MS % Recovery	Qualifier	MSD % Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	59	Q			69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	57	Q			59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	70				70-131

Matrix Spike Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-22 QC Batch ID: WG1497035-3 QC Sample: L2123366-10 Client ID: NHP_JCPROD-1												
Perfluorobutanoic Acid (PFBA)	4.73	36.8	43.7	106	-	-	-	67-148	-	-	30	
Perfluoropentanoic Acid (PFPeA)	9.16	36.8	47.9	105	-	-	-	63-161	-	-	30	
Perfluorobutanesulfonic Acid (PFBS)	5.34	32.6	36.8	96	-	-	-	65-157	-	-	30	
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	34.4	42.2	123	-	-	-	37-219	-	-	30	
Perfluorohexanoic Acid (PFHxA)	9.96	36.8	48.9	106	-	-	-	69-168	-	-	30	
Perfluoropentanesulfonic Acid (PFPeS)	ND	34.6	34.8	99	-	-	-	52-156	-	-	30	
Perfluoroheptanoic Acid (PFHpA)	7.21	36.8	46.8	108	-	-	-	58-159	-	-	30	
Perfluorohexanesulfonic Acid (PFHxS)	2.48	33.6	41.4	116	-	-	-	69-177	-	-	30	
Perfluorooctanoic Acid (PFOA)	33.0	36.8	71.2	104	-	-	-	63-159	-	-	30	
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	35	40.2	115	-	-	-	49-187	-	-	30	
Perfluoroheptanesulfonic Acid (PFHps)	ND	35	38.0	109	-	-	-	61-179	-	-	30	
Perfluorononanoic Acid (PFNA)	ND	36.8	39.3	106	-	-	-	68-171	-	-	30	
Perfluorooctanesulfonic Acid (PFOS)	3.03	34.1	43.3	118	-	-	-	52-151	-	-	30	
Perfluorodecanoic Acid (PFDA)	ND	36.8	37.9	103	-	-	-	63-171	-	-	30	
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	35.3	42.1	119	-	-	-	56-173	-	-	30	
Perfluorononanesulfonic Acid (PFNS)	ND	35.4	39.0	110	-	-	-	48-150	-	-	30	
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	36.8	38.6	105	-	-	-	60-166	-	-	30	
Perfluoroundecanoic Acid (PFUnA)	ND	36.8	38.6	105	-	-	-	60-153	-	-	30	
Perfluorodecanesulfonic Acid (PFDS)	ND	35.4	41.1	116	-	-	-	38-156	-	-	30	
Perfluorooctanesulfonamide (FOSA)	ND	36.8	37.5F	102	-	-	-	46-170	-	-	30	
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	36.8	42.2	115	-	-	-	45-170	-	-	30	
Perfluorododecanoic Acid (PFDoA)	ND	36.8	42.5	116	-	-	-	67-153	-	-	30	

Matrix Spike Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab	NHP_JCPROD-1			Associated sample(s): 10-22		QC Batch ID: WG1497035-3		QC Sample: L2123366-10		Client ID:		
Perfluorotridecanoic Acid (PFTrDA)	ND	36.8	48.4	132	-	-	-	48-158	-	30	-	
Perfluorotetradecanoic Acid (PFTA)	ND	36.8	40.8	111	-	-	-	59-182	-	30	-	
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	735	796	108	-	-	-	57-162	-	30	-	
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	34.7	32.8	94	-	-	-	69-143	-	30	-	
Perfluorohexadecanoic Acid (PFHxDA)	ND	36.8	58.9	160	-	-	-	40-167	-	30	-	
Perfluoroctadecanoic Acid (PFODA)	ND	36.8	26.2	71	-	-	-	10-119	-	30	-	
Perfluorododecane Sulfonic Acid (PFDDoS)	ND	35.6	42.5	119	-	-	-	85-154	-	30	-	
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND	35.4	46.8F	132	-	-	-	81-188	-	30	-	
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	34.2	35.6	104	-	-	-	55-158	-	30	-	
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	34.7	40.8	118	-	-	-	52-156	-	30	-	
N-Methyl Perfluoroctane Sulfonamide (NMeFOSA)	ND	368	406	110	-	-	-	10-185	-	30	-	
N-Ethyl Perfluoroctane Sulfonamide (NEtFOSA)	ND	368	388	106	-	-	-	10-202	-	30	-	
N-Methyl Perfluoroctanesulfonamido Ethanol (NMeFOSE)	ND	368	403	110	-	-	-	10-209	-	30	-	
N-Ethyl Perfluoroctanesulfonamido Ethanol (NEtFOSE)	ND	368	409	111	-	-	-	66-176	-	30	-	

Surrogate (Extracted Internal Standard)	MS	MS		MSD	MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	% Recovery	Qualifier	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97						10-162
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86						12-142
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	93						14-147

Matrix Spike Analysis
Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	RPD	RPD Qual	RPD Limits
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Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-22 QC Batch ID: WG1497035-3 QC Sample: L2123366-10 Client ID: NHP_JCPROD-1

Surrogate (Extracted Internal Standard)	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	60				10-165
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	69				10-187
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	69				10-189
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57				24-116
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	65				10-160
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	64				10-161
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	64				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	82				22-136
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)	92				10-206
Perfluoro[13C4]Butanoic Acid (MPFBBA)	65				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76				62-163
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	73				10-112
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	70				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99				70-131

Lab Duplicate Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab ID: DUP Sample		Associated sample(s): 01-09	QC Batch ID: WG1496267-4	QC Sample: L2122548-02		Client
Perfluorobutanoic Acid (PFBA)	8.56	8.41	ng/l	2		30
Perfluoropentanoic Acid (PFPeA)	18.3	19.0	ng/l	4		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	11.7	11.6	ng/l	1		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	4.77	4.75	ng/l	0		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	4.79	4.92	ng/l	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	12.8	12.2	ng/l	5		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluoronananesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab ID: DUP Sample	Associated sample(s): 01-09	QC Batch ID: WG1496267-4	QC Sample: L2122548-02 Client			
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		66		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		68		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	70		68	Q	70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	127		121		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	48	Q	49	Q	57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHxA)	57	Q	57	Q	60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	77		76		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	65		64		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	116		111		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	63		62		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	67	Q	69		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61	Q	61	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		71		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43		41		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFDA)	61		65		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		65		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65		60		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		65		22-136

Lab Duplicate Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab ID: DUP Sample	Associated sample(s): 01-09	QC Batch ID: WG1496267-4	QC Sample: L2122548-02 Client			
Perfluoroctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30
N-Methyl Perfluoroctane Sulfonamide (NMeFOSA)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	85		84		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	84		77		10-161

Lab Duplicate Analysis
Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab ID: NHP_JCMW-6	Associated sample(s): 10-22	QC Batch ID: WG1497035-4	QC Sample: L2123366-11 Client			
Perfluorobutanoic Acid (PFBA)	7.02	7.15	ng/l	2		30
Perfluoropentanoic Acid (PFPeA)	11.8	11.3	ng/l	4		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	21.1	20.5	ng/l	3		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	19.8	19.4	ng/l	2		30
Perfluorohexanesulfonic Acid (PFHxS)	6.05	5.94	ng/l	2		30
Perfluorooctanoic Acid (PFOA)	79.5	79.4	ng/l	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	17.0	16.7	ng/l	2		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluoronananesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab ID: NHP_JCMW-6	Associated sample(s): 10-22	QC Batch ID: WG1497035-4	QC Sample: L2123366-11 Client			
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	ND	ng/l	NC		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	ND	ng/l	NC		30
Perfluorohexadecanoic Acid (PFHxDA)	ND	ND	ng/l	NC		30
Perfluorooctadecanoic Acid (PFODA)	ND	ND	ng/l	NC		30
Perfluorododecane Sulfonic Acid (PFDoDS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	ND	ND	ng/l	NC		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	ND	ng/l	NC		30
11-Chloroeicosafauro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75	72			58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79	77			62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85	84			70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103	101			12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68	67			57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72	69			60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78	76			71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76	73			62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91	91			14-147

Lab Duplicate Analysis
Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-22 QC Batch ID: WG1497035-4 QC Sample: L2123366-11 Client ID: NHP_JCMW-6						
Surrogate (Extracted Internal Standard)		%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C9]Nonanoic Acid (M9PFNA)		70		67		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)		79		80		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)		64		61	Q	62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)		78		73		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)		41		37		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)		62		57		55-137
N-Deuteroethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)		42		32		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)		58		51		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)		59		53		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)		90		95		10-165
Perfluoro[13C2]Hexadecanoic Acid (M2PFHxDA)		70		62		10-206

Lab Duplicate Analysis

Batch Quality Control

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab ID: NHP_JCMW-6	Associated sample(s): 10-22	QC Batch ID: WG1497035-4	QC Sample: L2123366-11 Client			
Perfluoroctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30
N-Methyl Perfluoroctane Sulfonamide (NMeFOSA)	ND	ND	ng/l	NC		30
N-Ethyl Perfluoroctane Sulfonamide (NEtFOSA)	ND	ND	ng/l	NC		30
N-Methyl Perfluoroctanesulfonamido Ethanol (NMFOSE)	ND	ND	ng/l	NC		30
N-Ethyl Perfluoroctanesulfonamido Ethanol (NEtFOSE)	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		63		10-112
N-Methyl-d3-Perfluoro-1-Octanesulfonamide (d3-NMeFOSA)	63		57		10-161
N-Ethyl-d5-Perfluoro-1-Octanesulfonamide (d5-NEtFOSA)	61		52		10-160
2-(N-Methyl-d3-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d7-NMeFOSE)	65		59		10-189
2-(N-Ethyl-d5-Perfluoro-1-Octanesulfonamido)ethan-d4-ol (d9-NEtFOSE)	64		54		10-187

Sample Receipt and Container Information

YES

Were project specific reporting limits specified?

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2123366-01A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-02A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-03A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-04A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-05A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-05B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-06A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-06B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-07A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-07B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-08A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-08B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-09A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-09B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-10A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-10B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-11A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-11B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-12A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-12B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-13A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-13B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-14A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2123366-14B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-15A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-15B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-16A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-16B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-17A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-17B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-18A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-18B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-19A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-19B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-20A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-20B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-21A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-21B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-22A	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)
L2123366-22B	Plastic 250ml unpreserved	A	NA		4.5	Y	Absent		A2-537-ISOTOPE-36(14)

*Values in parentheses indicate holding time in days

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PPPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PPPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosfluoro-3-Oxaundecane-1-Sulfonic Acid	11CI-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9CI-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafuoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
	Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthrenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e., co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: Data Usability Report



Project Name: NHPC SUPERFUND
Project Number: Not Specified

Lab Number: L2123366
Report Date: 05/19/21

REFERENCES

- 134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C**, **SM4500CN-CE**, **EPA 180.1**, **SM2130B**, **SM4500CI-D**, **SM2320B**, **SM2540C**, **SM4500H-B**, **SM4500NO2-B**

EPA 332: Perchlorate; **EPA 524.2**: THMs and VOCs; **EPA 504.1**: EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.

Non-Potable Water

SM4500H,B, **EPA 120.1**, **SM2510B**, **SM2540C**, **SM2320B**, **SM4500CL-E**, **SM4500F-BC**, **SM4500NH3-BH**: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1**, **SM4500NO3-F**, **EPA 353.2**: Nitrate-N, **SM4500P-E**, **SM4500P-B**, **E**, **SM4500SO4-E**, **SM5220D**, **EPA 410.4**, **SM5210B**, **SM5310C**, **SM4500CL-D**, **EPA 1664**, **EPA 420.1**, **SM4500-CN-CE**, **SM2540D**, **EPA 300**: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8**: Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg**. **EPA 522, EPA 537.1**.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY		PAGE 1 OF 3	Date Rec'd in Lab: 5/5/21	ALPHA Job #: L2123366																															
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Westborough, MA Mansfield, MA TEL: 508-898-9220 TEL: 508-822-9300 FAX: 508-898-9193 FAX: 508-822-3298		Project Name: NHPC Superfund Project Location: Merrimack, NH Client: GZA GeoEnvironmental, Inc Project #: 04.0190987.14 Address: 5 Commerce Park North, Suite 201 Project Manager: Tanya Justham Bedford, NH ALPHA Quote #: Contract #1069635																																	
Phone: 603-493-1548 Fax: Email: tanya.justham@gza.com		Turn-Around Time <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush (ONLY IF PRE-APPROVED) <input type="checkbox"/> These samples have been previously analyzed by Alpha Due Date: Time:																																	
Other Project Specific Requirements/Comments/Detection Limits: Please also email login receipts and lab reports to michael.d.summerlinjr@des.nh.gov. Please provide excel files formatted for upload to the NHDES EMD and for GZA EQulS upload. Temperature blank included in cooler.																																			
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				<i>5/5/21 33:30</i>		<i>W. P. Smith</i> <i>10/24/2020</i>		<i>5/5/21 33:30</i>																											
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ALPHA ANALYTICAL ENVIRONMENTAL		CHAIN OF CUSTODY				PAGE 2 OF 3																											
						Date Rec'd in Lab: 5/5/21																											
						ALPHA Job #: L212 3366																											
		Project Information		Report Information		Billing Information																											
Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193		Project Name: NHPC Superfund		<input type="checkbox"/> FAX	<input checked="" type="checkbox"/> EMAIL	<input checked="" type="checkbox"/> Same as Client Info	PO #: 30078																										
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				Regulatory Requirements/Report Limits																													
				State/Fed Program: NHDES		Criteria: Sampling and Analysis Plan limits																											
Client Information		Project Location: Merrimack, NH																															
Client: GZA GeoEnvironmental, Inc		Project #: 04.0190987.14																															
Address: 5 Commerce Park North, Suite 201		Project Manager: Tanya Justham																															
Bedford, NH		ALPHA Quote #: Contract #1069635																															
Phone: 603-493-1548		Turn-Around Time																															
Fax:		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Rush (ONLY IF PRE-APPROVED)																															
Email: tanya.justham@gza.com		Due Date: Time:																															
<input type="checkbox"/> These samples have been Previously analyzed by Alpha																																	
Other Project Specific Requirements/Comments/Detection Limits: Please also email login receipts and lab reports to michael.d.summerlinjr@des.nh.gov. Please provide excel files formatted for upload to the NHDES EMD and for GZA EQulS upload. Temperature blank included in cooler.																																	
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PFAS (NHDES Contract List)				SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES																						
		Date	Time																														
Please check appropriate boxes below																																	
<table border="1"> <tr> <td>Container Type</td> <td>- P</td> <td>-</td> </tr> <tr> <td>Preservative</td> <td>- A</td> <td>-</td> </tr> </table>								Container Type	- P	-	-	-	-	-	-	-	-	-	-	Preservative	- A	-	-	-	-	-	-	-	-	-	-		
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<table border="1"> <tr> <td>Submitted By: <i>Tanya J</i></td> <td colspan="2">Date/Time: <i>5/5/21 1650</i></td> <td>Received By: <i>Dr. A</i></td> <td colspan="2">Date/Time: <i>5/5/21 1650</i></td> </tr> <tr> <td>Revised By: <i>A</i></td> <td colspan="2">Date/Time: <i>5/5/21 1650</i></td> <td>Received By: <i>Reopened on</i></td> <td colspan="2">Date/Time: <i>5/5/21 1740</i></td> </tr> <tr> <td>Initials: <i>A</i></td> <td colspan="2">Date/Time: <i>5/5/21 1650</i></td> <td>Initials: <i>D</i></td> <td colspan="2">Date/Time: <i>5/5/21 1930</i></td> </tr> </table>								Submitted By: <i>Tanya J</i>	Date/Time: <i>5/5/21 1650</i>		Received By: <i>Dr. A</i>	Date/Time: <i>5/5/21 1650</i>		Revised By: <i>A</i>	Date/Time: <i>5/5/21 1650</i>		Received By: <i>Reopened on</i>	Date/Time: <i>5/5/21 1740</i>		Initials: <i>A</i>	Date/Time: <i>5/5/21 1650</i>		Initials: <i>D</i>	Date/Time: <i>5/5/21 1930</i>									
Submitted By: <i>Tanya J</i>	Date/Time: <i>5/5/21 1650</i>		Received By: <i>Dr. A</i>	Date/Time: <i>5/5/21 1650</i>																													
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Initials: <i>A</i>	Date/Time: <i>5/5/21 1650</i>		Initials: <i>D</i>	Date/Time: <i>5/5/21 1930</i>																													
								Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.																									
FORM NO: 01-01(1-NJ) (Rev. 5-JAH-12)																																	



CHAIN OF CUSTODY

PAGE 3 OF 3

CHAIN OF CUSTODY		PAGE 3 OF 3	Date Rec'd in Lab: 5/5/21	ALPHA Job #: L2123366																																	
		Project Information		Report Information <input type="checkbox"/> FAX <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> ADEX <input type="checkbox"/> Add'l Deliverables	Billing Information <input checked="" type="checkbox"/> Same as Client Info PO #: 30078																																
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TEL: 508-896-9220	TEL: 508-822-6300	State/Fed Program: NHDES		Criteria																																	
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ALPHA Lab ID (Lab Use Only) <i>23.366-24</i>	Sample ID <i>NHP_MW-109S</i>	Collection		Sample Matrix GW	Sampler's Initials MM	Please check appropriate boxes below																															
		Date <i>05/05/21</i>	Time <i>10:30</i>			<input checked="" type="checkbox"/> <input type="checkbox"/>																															
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Relinquished By: <i>Tanya J</i>						Date/Time <i>5/5/21 10:50</i>		Received By: <i>On Site</i>		Date/Time <i>5/5/21 10:50</i>																											
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FORMULA: C₁₁-OH-CH₂
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